AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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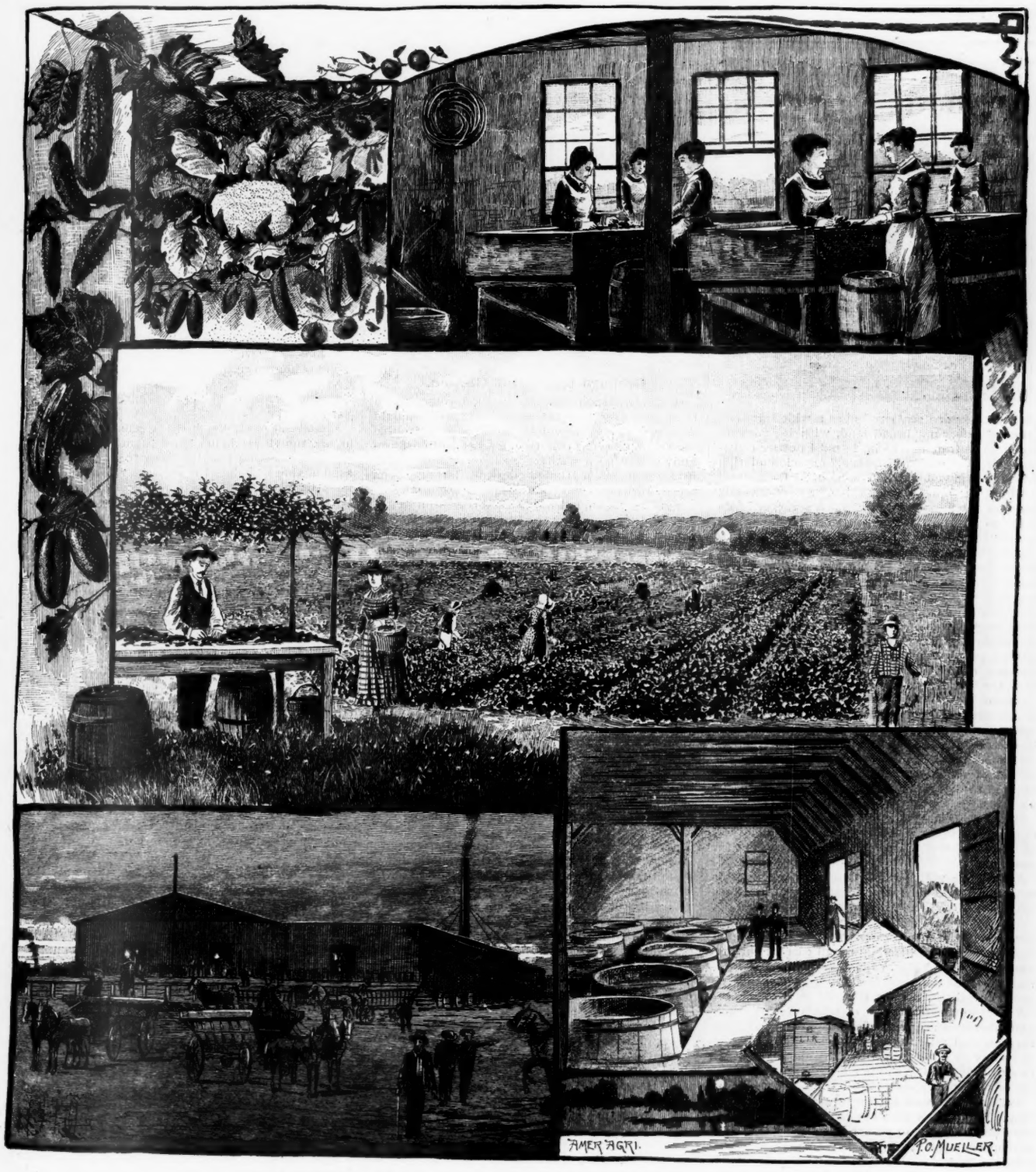

EASTERN PICKLE FIELDS AND FACTORIES.

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August.

All the long August afternoon,
The little drowsy stream
Whispers a melancholy tune,
As if it dreamed of June,
And whispered in its dream.

The thistles show beyond the brook
Dust on their down and bloom,
And out of many a weed-grown nook
The aster flowers look
With eyes of tender gloom.

W. D. HOWELLS.

FARM AND GARDEN WORK

AUGUST, 1889.

Our readers are scattered over a wide territory—not only over our broad land, with its varying climate, but they are to be found in other continents and the "isles of the sea." In view of this we long ago gave up the old fashioned "Calendar," in which the time for performing farm operations was laid down, and give instead a series of hints likely to be useful whenever and wherever the operations under consideration are carried on.

One of the most unpleasant features of our farm life is its isolation. People live within a few miles of one another for years, and never become acquainted. One of the most taking features of the "Grange movement" was that it proposed to bring people to co-operate in a common object, and to include families. We favor whatever will bring farming people together and interest them in some common object. Local fairs might accomplish what the founders of the Grange hoped from that.

Improvements.—Wet and low places may often be converted into fertile meadows. Draining, and cutting and burning the natural growth must, in most cases, precede the breaking-up. Such places will sometimes be found to be unsuspected storehouses of muck, which may be drawn out and allowed to dry, and finally go to the stable, barnyard, etc.

Heavy Soils are so much improved by winter exposure that as much as possible of such soil should be plowed up this fall, and left rough for the winter.

Root Crops will be infested with weeds this month, and the cultivator must be kept in use as long as the leaves will allow.

Turnips.—Our farmers, as a rule, do not make the most of the turnip crop. To get a good crop of rutabagas requires good land and careful culture, and to be sown early. Between these, the rutabagas and the flat strap-leaf kind, which are often sown broadcast among corn or in stubble, are several intermediate sorts, of which Yellow Stone and Aberdeen are examples, are very good table turnips, and nutritious for stock. They may be sown any time this month. They should be sown in drills, and if the soil is not rich, apply a dressing of superphosphate, say 300 pounds to the acre.

Potatoes.—As soon as the tops are dead, dig the crop. Expose the potatoes to the sun as little as possible. A slight exposure even to diffused light will cause some varieties to become green and unfit for food.

Rye.—In any city or other place where good horses are kept there is a ready market for rye straw, which is threshed with a flail and put up in small, neat bundles, and will often bring as much or more than the value of the grain from the same field. If sown on fairly good land, rye will make an excellent pasture, or better, can be cut for the cows; and again, it gives an excellent soiling crop in the spring.

Wheat.—The variety, as well as the time of sowing, will be decided by the experience to each locality. Sowing late to avoid the fly of course is unfavorable for a good autumnal growth, and of course brings a diminished yield. Drills are now in general use, and many have drilled the seed in rows far enough apart to allow the use of a cultivator between them, and think it pays.

Live Stock.

Milch Cows.—A sun-struck cow is ruined as a milker for this season, if not forever. Avoid such a calamity, if there are no trees in the pasture, by putting up a frame and roofing it with leafy brush, for an artificial shade. Later plant trees.

Horses enjoy greatly a bath after work. Where there is a stream with a safe bottom easily accessible, give them and the boys a treat. But always let them cool off before bathing. Horses hard at work through the day get hardly satisfied upon grass only. Give a feed of grain before turning out to pasture, and another early in the morning.

Sheep.—Wean the lambs, giving them rich grass or a clover pasture. Prepare for early lambs; a Southdown makes the best cross for quality. Whatever breed is used, be sure that the ram is pure blood.

Swine.—The run of a good pasture will bring the pigs into excellent condition for fattening.

Poultry.—Now is a good time to kill off (and eat) the mongrel fowls that have accumulated, and start anew with pure stock of whichever variety may be preferred.

Orchard and Fruit Garden.

The many peach orchards planted, often in the most unpromising localities, a few years ago, should this year, if ever, be "coming in." The chief trouble where peaches have heretofore been almost unknown, will be a want of pickers. The returns from peaches marketed depend largely upon proper picking. The fruit should not be at all soft nor yet too green, but in just that condition that it will be "in eating" by the time it reaches the consumer. If the fruit will yield to slight pressure it is too ripe for the basket or crate. Over-ripe fruit should be gathered for home use or the pigs. A skilled picker must not only use his fingers but his judgment, and assort as he goes.

Pears.—Early sorts ripen up very quickly, and no soft fruit should go into the package. A fruit grower should know the peculiarities, in this respect of each variety. The Bartlett, the most popular, is much improved by gathering early and ripening it in the house.

Apples.—Some of the best varieties are very showy. Care in picking, assorting and packing will pay with them, and bring ready sale, even in years of abundance.

Insects must still have attention. If the apple-worm was not poisoned early in the season, bands around the trees will be of service to entrap the worm as it seeks a place to form its cocoon. Bands of hay, bagging, or other coarse fabric, or even heavy paper fastened around the trunk with a single tack, should be looked to every week or ten days. This, if supplemented by picking up all fallen fruit, will materially diminish the number of worms.

Budding may be done as soon as the bark on the stock will "run" freely, and buds in the proper condition of maturity can be had.

Blackberries and Raspberries.—As soon as the fruit is gathered, cut away the old canes. Select new canes needed for fruiting next year, stopping their upward growth at the desired height. Treat all others as weeds.

Grapevines.—Apply sulphur at the first appearance of mildew, and follow it up. We are surprised to find that some well-known pomologists, if they do not advise, speak favorably of ringing the vines. This is done by removing a ring of bark a quarter of an inch wide, or by twisting a wire firmly around the shoot, just below the lowest cluster. This causes early ripening and fine-looking fruit, but is destructive to flavor. Most grape-growers, with a conscience about them, look upon ringing grapes that are to be marketed in the light of a fraud. Horticultural and similar societies should speak on this matter.

Strawberries.—Plants from early runners, struck in pots, may be planted as soon as strong and well established, and will usually have a very fair crop the next year.

Kitchen and Market Garden.

When it is said of a market gardener that he lets his "pussley" get ahead of him, it is equivalent to saying that he is a careless cultivator. The flowers are seldom seen, but it is rare to find a plant so small that it does not ripen seeds. If purslane is merely hoed up and left on the ground, it rather likes it, and will take root and grow all the more vigorously. If land is not occupied with a crop, weeds will take possession. Good management, if no crop that can be cultivated is needed, at this time, is to sow all such unoccupied land with rye. Yellow Stone, Aberdeen, and turnips of that class, sown in drills, will pay the cost of cultivation. Spinach is also a useful late crop.

Beans.—Keep free of weeds, but do not hoe while the vines are wet. Sometimes a vine of Limas will not "take to the pole," and must be tied to it. If late snaps are wanted, sow Early Valentine, or other early varieties.

Celery.—Set out plants as soon as the plants are large enough.

Sweet Corn.—Every lover of sweet corn should have an abundance until frost. Sow the early sorts every ten days. If the last sowing fails to give good ears, the fodder will pay for the trouble.

Egg Plants are great feeders, and like a frequent dose of liquid manure. As the fruit gets large place under it a wisp of straw or hay, to keep it from the ground.

Melons.—Of some sorts a large share of the fruit sets too late to ripen before frost. Cutting these off will help the rest of the crop. A mulch of straw or bog hay will keep the fruit from the ground, and hasten ripening.

Onions.—Dry well and store in a cool airy place, if not sold at once.

Sweet Potatoes.—Keep free from weeds, and move the vines often enough to prevent rooting at the joints.

Squashes.—Pull up large weeds that appear among the vines; do not allow them to take root.

Tomatoes.—One usually likes to save his own seed of these. Select the earliest, ripest and best shaped; place the pulp in a vessel and cover it with water; allow it to stand—watching frequently—until fermentation has destroyed the slimy matter that surrounds the seeds, when they may be readily washed clean and dried.

Seed Saving of but few things is to be commended in private gardens, as the needed care will not be given. For most seeds it is more satisfactory to buy of those who make a business of raising them. In small gardens there is great danger of crossing and "mixing."

Flower Garden and Lawn.

In August our gardens and grounds appear at their worst. The drought of summer has been drying out the soil, and the effect is manifest this month in the forlorn appearance of grass, flowers, trees, and every other living plant.

The White Grub is often destructive by eating off the roots of the grass. This is the larval state of the "June bug," or beetle. It has years of special abundance, and it is well to trap the beetles at night by means of lamps placed over vessels of water.

Neatness.—The neatness of beds and borders will depend upon the use of stakes for all plants that need them. Many use the painted stakes sold for the purpose, because they think they "look pretty" with their white heads upon a green stake. When properly used, the stakes themselves should not be seen, and the fairly straight stems of bushes answer as well as anything.

Bulbs.—It is well to remember that the future of any bulb depends upon its making a good growth after flowering. Therefore encourage the leaf growth.

Walks and Drives.—Do not allow late weeds to get a foothold, and repair the surface with fresh gravel when needed.

Greenhouse and Window Plants.

Plants that are set out for the summer should not be forgotten. Water as needed. The hot sun upon the pots will bake the ball of earth, to the great injury of the roots. If former advice, to make any repairs to greenhouses, heating apparatus, as well as laying in needed supplies, has not been heeded, delay no longer. For window plants a light cellar makes an admirable potting shed and store-room, as well as the best place to keep tender plants that are resting.

THE MANUFACTURE OF PICKLES.

Our first-page illustration of this issue comprises a series of views of a wholesale manufactory of pickles on Long Island, N. Y. To one whose ideas of pickle making are based on the domestic industry alone, the magnitude of one of these establishments is astounding. Some idea of the scale upon which the business is conducted may be gathered from the following array of figures. During the season of 1888, the business of the two factories at Farmingdale and Central Park, L. I., pickled 22,000,000 cucumbers, 500 barrels of tomatoes, 500 barrels of cauliflower, with proportionate quantities of string beans, onions and other ingredients of mixed pickles; 1,500 tons of cabbage were made into sauerkraut; 15 carloads of salt and 300 barrels of vinegar were employed.

The central picture of our illustration gives a partial view of a cucumber field during the harvest, which begins in the latter part of August, and continues until the second week of October, unless sooner terminated by an untimely frost. The "pickles," as they are called from the first, are gathered in baskets by women and boys, and brought to an assorting table which stands in the field, sheltered by a canopy of green boughs. Here they are assorted, and those of like size put in barrels, in which they are carried to the salting-house. The view in the lower right-hand corner shows one end of the salting-house. It is 265 feet long and contains 36 tanks, having a capacity of 10,000 gallons each. After the pickles have lain in the brine a sufficient length of time they are removed to the freshening vats, two of which are shown in the upper portions of the picture. Here they are soaked in fresh water warmed by steam pipes. When the salt is all extracted the pickles are removed by girls and women, and placed in vinegar either in barrels or glass jars.

The manufacture of sauerkraut is an important branch of the pickling industry. There are two cutting machines, each of which cuts six tons a day, the united capacity of the two being 120 tons of cabbage per day.

The farms attached to the pickle factories supply only a small proportion of the materials worked up, the balance being purchased from farmers in the vicinity. These bring their supplies in huge wagons, and the grounds around the factories present a busy scene at the end of each day, when the principal part of the produce is brought in. The view in the lower left-hand corner is of the packing-house at Central Park, L. I., with farmers' wagons. The small diamond shaped view on the opposite corner is of the railroad platform on the opposite side of the same building.

ECONOMY AS FOUND IN PLANTS.

DR. BYRON D. HALSTEAD.

There are numerous vegetable substances which taken together are known as albuminoids or proteids. They are the compounds which make up the so-called "richness" of such seeds as peas and beans. In other words they are the vegetable products most nearly resembling lean meat in composition. There is a substance, or group of similar substances now generally known under the name of protoplasm. This protoplasm is a wonderfully variable compound; but it is present in all living parts of plants and animals, and is the particular portion in which the changes known as vital activities take place. Protoplasm is not life, but it is the substance of all substances in which the inscrutable something we call life inheres and through which it most easily manifests itself. Vegetable structures are built up of small units called cells. These living cells are minute closed sacks, in the center of which is a semi-liquid substance known as the protoplasm. From this protoplasm the wall of the sack was formed and from it new layers of of the cell wall may be laid down until the cell becomes solid. In a young cell with a thin wall it is often possible to see the protoplasm in motion. The force that is back of the protoplasm and causes it to move is called life. When the life has departed, due to one of many causes, the protoplasm is said to be dead.

The albuminoids or proteids are very closely related to the life-bearing substance which bears the accepted name of protoplasm. The chemist may not be able to find any difference between them, for the element of life is not weighed nor measured. In short, the proteids are the substances which stand next to the protoplasms and are the compounds that become protoplasm by the entrance into them of the vital spark.

It goes without further argument that protoplasm is present in all living parts of a plant, and should be most abundant in these portions where vital activities were the greatest. The albuminoids are virtually the reserve form which substance assumes that are to become protoplasm, or in short, protoplasm may upon the loss of its manifest vitality be called albuminoids.

Now, if we apply these facts to the question of the nutritive ration of any portion of a plant, it is evident so long as protoplasm is practically equivalent to albuminoids, that any fodder is more nutritious if cut when alive than after it has become dead. Any portion of a plant that undergoes the process of death usually has its protoplasm withdrawn to some other part that is alive and can make use of it. Take for example, the stems of clover or of rye: if cut when green and before fully grown they will be richer in albuminoids than if left to stand until ripe. In case of the latter the protoplasm is previously slowly withdrawn to the leaves or the seeds. Fodder plants, for the sake of the fodder, should be cut before the time of ripening the seeds has arrived. The principle of the conservation of such a complex and expensive compound as protoplasm, in whatever form it may be met with, is so rigidly observed in plant life that the most is made out of every ounce of the vital substance, and when no longer of use in one place it is taken to another, and if not needed by that particular plant it is stored in or around the embyro plantlets in the several seeds it produces. The protoplasm of the growing leaf diminishes as the leaf lags in its work of making starch and like substance under the influence of the sun's rays, and may ultimately make the seed to aid the next generation. Of course, all protoplasm is not withdrawn, as it would not be profitable to be so thorough as that. The plant is a very economical living thing and sets a good example before those who grow it for profit.

EFFECTS OF FOODS—LEAN PORK.

F. D. CURTIS.

The best results can be had with breeding sows by turning them into a field where there is plenty of pasture. It is not advisable to allow them to have pigs where other hogs run, although, in a large range, there is little danger of the pigs being disturbed or injured when born. One thing is sure—there is no food which will make better pigs or put the sows in better condition for bearing young than grass. It seems to be as natural food for swine as for any class of animals. I have known sows which destroyed their pigs in the spring, to make the best of mothers in the summer when fed on grass. In the spring they were feverish and made frenzied by their physical condition; while in the summer by the cooling and succulent character of the grass they were in perfect condition for the ordeal of bearing young. Feeding vegetables has a similar effect, and when sows have these regularly they are always sure to do well. Fruits are also natural foods for swine, and sows will do well if fed nothing but apples. In the summer hogs should always be on the earth and given a chance to root. When it is known that all these cheap foods are so natural and healthful for swine, it seems strange that so many farmers persist in keeping their hogs, the year round, on grain. An acre of sweet corn, fed stalks and all, will go a long way towards fattening a lot of hogs. Sorghum is also excellent. Weeds are allowed to go to seed, for extra work the next year, which would make excellent pork. Here is a maxim: The cheapest foods make the best pork. The reason is, it is the leanest. Lean pork then being the best, we should try to make it. Confinement in pens tends to increase the fat. Exercise develops the muscles. The muscular part is the best food. The fat is largely waste. We make fat to throw it away. People buy hams, not for the fat, but for the lean. When the fat is wasted it makes the lean cost just so much more. Reduce the fat and increase the lean.

Can this be done? Certainly. In this way: Keep the pigs all their lives in the pasture. Feed skim-milk and bran. Keep corn away from them. Give them vegetables and apples with the bran. When the bodies or frames are grown, give them oat meal or rye, ground entire, mixed with bran, putting in twice as much bran as rye. Keep up the vegetable and apple diet and allow them during this time to eat all the grass they will. A little corn may be fed towards the end. Pork made in this way will have more lean, and will be tender and juicy. At Kirby Homestead, with our breed of hogs, and using turnips, we have produced hams seventy-five per cent lean. The fat is something more than mere lard—animal oil. It is meat, with the substance and grain of meat. To get such pork is worth trying for, as it is in demand. The sausage and the other food products made from such pig meat are superior in quality and taste. There is a tenderness and flavor which enhances the value. Pigs should not be fed so much or gorged to such an extent that

they will not go out into the pasture. An active pig will make better meat than a helpless one—made so by lack of true muscle and vigor. It is advisable to plant apple trees for early ripening, in order to give the pigs a start. Fifty trees of this kind have been set this year at Kirby Homestead, including twenty Early Harvest. Apples do not make fat pork, but they do make plenty of lean meat, and that of extra quality. Pumpkins can be utilized in the same way. Gradually the requirements of consumers for more lean pork will open the eyes of farmers to the fact that the consumers are right and we will have less of the greasy, indigestible animated lard tubs called "early matured pork." "The most weight in the shortest time," is a heresy which has broken down lots of American stomachs and set thousands of people against pork. There is no animal on the farm which can be turned to better account than the hog to utilize wastes and cheap foods, and as a factor for enriching the farm. For a steady diet give the pig grass.

MUTTON FOR THE TABLE.

A. B. ALLEN.

The AMERICAN AGRICULTURIST has contained many highly valuable and interesting articles on mutton sheep, the perusal of which I hope will induce many flock masters to breed and rear such sheep as produce a fair quality of wool with a superior quality of mutton, like the South Down, for example. Too much of the mutton sold in our markets is so dry and tough as to be almost uneatable. Such meat is alike unsatisfactory and unprofitable to the consumer, and is dear at any price. This is particularly the case with mutton chop, which often consists of two coarse bones and a mouthful or so of moderately tender meat growing close to where the two join at a right angle, while all the rest can scarcely be masticated, and if so, gives little nourishment and is hard of digestion.

A breed of large Merinos has been grown for some years past in Western Pennsylvania and that part of Ohio bordering on it which, it is claimed, produces a fair quality of Merino wool and a good carcass of mutton. But we should not wait the slow spread of these, but continue to import from England the various breeds of Downs, and in much larger numbers than has heretofore been done. Instead of hundreds we should multiply these by thousands, until our country is filled with them and our markets abound with their lean, tender, juicy mutton.

I wish every American housekeeper could have a taste of a well-cooked English chop, for after that I think he would do his best to promote the production of them in his own country. When traveling in England it was the only meat I ordered at the hotels, for I liked it much better than beef, the latter not excelling our own, as English mutton does.

WHITE HELLEBORE.

A. S. FULLER.

The constantly-increasing demand for the powdered root of white hellebore (*Veratrum album*) for use as an insecticide, naturally awakens an interest in the history of the plant and a desire to learn how it first came into use for such a purpose. But, like many other useful plants, its early history is rather obscure, and it is only within modern times that we find any authentic records, although traditions may reach back to earlier ages of the world.

Some of our earlier botanists believed that the white hellebore of modern times was the same plant referred to by Dioscorides and Hippocrates, but Dr. Sibthorp, in his *Flora Græca*, says that the one known to these ancient physicians was a species of foxglove, probably *Digitalis ferruginea*. But as the plant known to us as white hellebore is indigenous to the mountainous regions of Europe, it no doubt came into use as a medicine or poison at an early date, and it is supposed to have been first employed to destroy external parasites on man and domestic animals, although it was once extensively used internally for various diseases.

Who first suggested the use of the powdered root of this plant for destroying insects on plants, I have been unable to determine, but it would seem to have been a natural sequence of its known properties for destroying insects and parasites on animals, just as tobacco came to be employed for the same purposes. We are led to think that white hellebore was first used for destroying the gooseberry and currant caterpillars about fifty years ago, from a reference to it in Loudon's *Suburban Horticulturist*, 1842, where under the head of Toxicaceous herbs, he says, "The white hellebore is a melanthoceous tuberculous-rooted perennial, a native of Denmark, and formerly in much repute as a powerful medicine." The part employed is the root dried and powdered, and as it has lately been found more efficacious than tobacco powder in destroying the caterpillars on the gooseberry, it might be worth while to cultivate it in gardens for this purpose.

From the remarks of Loudon we conclude that hellebore had not been in use for many years previous to his writing the paragraph quoted, for he says, "lately been found," etc. Tobacco had been in common use for killing the gooseberry caterpillar, and it is still an excellent remedy, if applied while the leaves are wet with dew or from a summer shower. Our common native green hellebore, *Veratrum viride*, possesses similar poisonous properties as the white, and might be employed for the same purposes if the foreign article should fail us at any time in the near future. It was known to the Indians, and according to Joscelin it was employed by them in the election of their chiefs: the man who could swallow the largest quantity of this root without showing its ill effects was regarded as the strongest and most worthy to command the rest. The early settlers in this country were accustomed to soak their seed corn in a decoction of green hellebore root for the purpose of poisoning the crows that came to pull up the young plants, hence one of its local names, "crow poison." A far better practice now prevails, that is, smearing seed corn with tar. When thus prepared the crows will not eat it; consequently, we not only prevent the destruction of the corn, but also one of our most intelligent and useful birds.

PROTECTION AGAINST FLIES.

The plague of flies touches a very tender spot—the pocketbook—for it causes animals to lose flesh, or at least to make less gain than they would otherwise. By affording protection to the animals, we save money as truly as we do by giving them comfortable shelter. The best protection for hogs is the wallow. Though cattle have tough hides, flies occasion them much discomfort, and it is humane and is profitable to make a smudge. In some situations this is actually necessary at certain seasons. The animals soon learn to take advantage of the smoke.

Horses suffer greatly from flies, on account of a tenderer skin and sensitive nervous organization. When we have them at work, their struggles against their tormentors are annoying to us. It is unpleasant to use animals kicking, biting and stamping at flies. For farm teams the cheapest protection is leather nets. With reasonable care these will last for years. They should be cleaned and oiled at least once a month while they are in use, or the sweat of the animals will rapidly rot them. They increase the warmth of the animal as little as any efficient protection. Cotton nets are a good protection to the carriage horse, but are not strong enough for farm work. Those who cannot buy leather nets should get the coarsest gunny sacking. This, being very open, does not much heat the animal. The cover should reach over the neck, with pockets to cover the ears. These covers should be washed once a month while in use, and when they are put away at the end of fly time. Gnats infest the inside of horses' ears. Pure lard is a good protection, applied once a day. The deposit by the bot-fly of its eggs under the jaw, makes many horses almost unmanageable. A cloth can be tied to the bridle in such a way as to protect the jaw.

The legs of horses require protection even more than their bodies. Flies choose the legs, as the skin on these parts is thinner and the blood vessels are nearer the surface. It is strange that we do not oftener see the legs of the animals protected, as the flies are not much disturbed by stamping. Leggings from old overalls, or made of gunny sack, are good material, and the man ashamed to drive a team so protected about his farm has far more false pride than good sense. Leggins made like the leather nets for the body are, in the end, the cheapest and can be made by any harness maker.

Do Not Crowd Your Plants.—There is nothing gained by growing three plants where there is only room for two. The two plants that the place would comfortably accommodate will be much finer than the three that you could manage to "just squeeze in." And remember that one plant, well-grown, is worth a score of poorly grown ones. One good plant is something to be proud of, while a number of poor specimens ought to make the grower ashamed, not of the plants, but of himself. Treat plants precisely as you would people, and give them all the chance they want to develop. Let them show what they can do, and they cannot do this when they are cramped.

IMPROVED ROSCOMMON SHEEP.

The Roscommon is a native Irish breed of sheep, which originated in the old province of Connaught. That province has from time immemorial been the principal sheep raising section of Ireland. The Connaught sheep of the old style were coarse, long-legged animals of slow growth, not attaining maturity and full weight until three to four years of age. But great improvement has been wrought in the breed by careful selection and the infusion of Leicester blood. By this cross both carcass and fleece were greatly ameliorated. The mutton lost its coarse quality, resembling the finely-marbled flesh of the English breeds; the fleece became denser and the staple long and lustrous. In early maturity, quality of mutton, length and quality of fleece, the improved Roscommon sheep somewhat resemble the Lincolns, but they are lighter and far more active. The ewes weigh from 140 to 180 pounds, fat wethers from 200 to 300 pounds. The wool is soft, silky and lustrous. The average weight of fleece is eight to ten pounds for ewes, while full-grown rams have yielded clips as high as twenty pounds.

ROSCOMMON SHEEP AT HOME.

The Roscommons are classed among long-wooled sheep. They are hardier and more prolific than the Leicesters or Cotswolds, more active and better adapted to broken country than the Lincolns.

Millet for the Silo.—This crop is an exceedingly valuable one, although, perhaps, because it is so easily grown, it is not popular. Last year a crop of millet was sown in a four-acre field, that had been in pasture for several years and had been well manured. One bushel of seed per acre was sown. The crop grew thickly and tall,—nearly six feet,—before the heads began to appear, and it was cut before half the heads had emerged from the sheaths. The four acres yielded twenty-five large two-horse wagon loads of half-cured fodder, which was put into a small silo sixteen by twenty and fifteen feet deep. The fodder fed eight head of horses and colts, two yoke of working oxen, fifteen head of two-and-three-year-old steers and heifers, fourteen yearlings and a bull, equal to forty-two head for eleven weeks, and the fodder was eaten greedily to the last without any waste. At this rate one acre would have fed one head for one hundred and fifteen weeks, or more than two years. Then what better or cheaper crop is there than this, which occupies the ground only three months, requires no cultivation and costs for all expenses not more than four dollars per acre? But it needs good soil and earlier sowing than usual.

SUMMER CARE OF LAMBS.

August and September are critical months for the lambs. Very likely they have been somewhat neglected during the hurry and heat of July. Certainly now the pastures are dried and short, water scant, and there are heat, flies and the attacks of parasites. Only the best of care will prevent the death of enough lambs to reduce largely the profit of the season. Even with it there are likely to be sick lambs, and it will be necessary to provide a hospital for them. A cool, dark, clean pen is the best hospital, and to it every sick one of the flock should be brought during the warm weather.

Diarrhea is apt to prevail, and in twenty-four hours it will become dysentery, and the lamb will be found dead in a corner unless a close watch is kept. This diarrhea is thought to be rather of the nature of a blood disease, and to be produced by heat, scant or unwholesome drink, nervous depression, and the foulness of the out-of-the-way places the animals seek. Preventives are, shelter from the heat, abundance of good water, and the reinforcement by palatable, succulent feeds of the exhausted pastures. The filth in the region of the tail and the strong odor of the abdomen of the wethers is apt to attract the blow-fly, *Sarcophaga carnaria*, one of which may be responsible for twenty thousand larvæ in a season. A "fly-blown" lamb is soon a dead one, unless effective measures are taken. Crude petroleum is fatal to the larvæ, while healing to the lamb, and is the best remedy. But prevention is better—watch the lambs and clean thoroughly any foul or strongly odorous ones.

An all-'round preventive for fall ailments, including "paper skin," is full feeding—not the feeding of dry, oily grains, but largely of green, succulent food. Putting the lambs in the corn-fields is very beneficial. The lambs get shade and additional green food;

they do not injure the corn, as they remove only the lower blades. They are a benefit to the corn, as they will keep down any weeds that may have been overlooked in cultivation, and if the removal of the lower blades has any effect, it is to hasten the maturing of the corn and get it out of the way of frost. Sheep much enjoy having to exercise somewhat for their food, and the lambs will be all the better for their nibbling along the row. They may well be given, also, a little bran, rye and oats. It is always risky to have sheep drink from streams with grassy or weedy banks, and especially so at this season.

A GOOD PORTABLE HOG PEN.

W. A. GRAHAM, INDIANA.

A cheap, convenient hog pen that is portable is built as follows: Take two pieces of good, durable timber, three by nine inches each, fifteen feet in length, round off the ends in the form of a sled runner, then lay them parallel eight feet apart, with the rounded edge on the ground. Take four scantlings and halve or tenon in crosswise one piece at each end, and eight inches from the ends of the runners and place the others so as to support a floor in one-half of the pen. Adjust these strips so they will set about two inches below the level of the upper edge of the runners, then lay a floor of ash or oak lumber one inch thick over one-half of the pen, leaving the other half a dirt floor. This, however, may be arranged as may suit best; one-half may be left, or, if desirable, the whole pen may have a floor. Now mortise in two-by-four scantling at each corner and midway for posts on which to nail the boards or slats for the enclosing. It is necessary for comfort that at least one-half of the pen be covered; and for this reason make the posts for the siding about one foot longer on one side than the other, so as to give some slope to the roof. The roof ought to be elevated enough to allow a man to walk under it. If only one-half of the pen is floored, there must be a partition across, and in this arrange a slide door so as to shut the hogs in or out of either section, and the pen is complete.

If hogs are wanted to fatten surely and quickly, they must be confined to close, clean quarters, and that is the design of this pen. It can be moved easily from one place to another, and thus be entirely free from accumulations of filth. By hitching a span of horses to either end of it, it can be readily moved anywhere with the hogs in it. In case one-half is left unfloored, the hogs can be shut in the floored portion and kept there until the pen is moved; then open the slide door and they are in their new location.

COOKED OR UNCOOKED?

W. H. W. CAMPBELL, CALIFORNIA.

It would appear from several recent experiments that the utility of cooked food for animals has some definite limitations. There has been too much indiscriminate feeding of this sort, whereas there are some general principles by which it should be directed. The results of some of the experiments referred to are worth noticing. In the first place, there should be discrimination between animals that chew the cud and those which do not, and in the case of the former, it is not wise to seriously discourage the animal in following the bent of its nature. Several experiments made at Poppelsdorff, Germany, with hay, demonstrated that the protein of the steamed fodder digested with cattle in the ratio of thirty per cent, while with the hay in its natural condition the digestion mounted to forty-six per cent. That the digestion of albuminous food is diminished by cooking, was shown by the experiments of Mr. Ladd at the New York Experiment Station. Corn meal cooked and uncooked was submitted to the action of pepsin, and it was found that with the raw food the ratio of digestion was 72.58 per cent, while in the cooked it fell to 63.17 per cent.

It has been generally taken for granted that it was advantageous to cook swine food without discrimination. But an experiment recently made by M. Dulong, at Zirkewitz in Pomerania, showed that uncooked barley meal produced in his swine an increase of weight three times greater in a given time than when cooked. The period of trial was brief, to be sure, only fifteen days, but the experiment is amply confirmed in principle by others made on several occasions in the State of Wisconsin. Thus, Prof. Henry, of the Wisconsin State University, mentions in his report for 1886-7 that the superiority of uncooked over cooked barley meal in fattening hogs was at the least fifteen per cent. A similar result was furnished by experiments on corn and wheat meal and peas. This is an important point, for if the principle be correct, not only is the extra expense of cooking needlessly incurred in these cases, but there is an actual drawback from the alimentary point of view. Furthermore, there is another disadvantage in that this feeding with cooked grains favors an unwholesome gluttony in the swine, who are too greatly spared the operation of mastication, which nature intended for the complete saturation of the food with saliva.

On the other hand, experiments show that in some cases cooking has decided value. Thus in respect to potatoes, tests made in Germany by Walker demonstrated that the fattening effect of cooked potatoes upon hogs was considerably greater than that of the raw article. His experiment was of three months' duration, tried upon two lots of fine porkers each. The ratio of gain between the cooked and the uncooked food was as 86.5 to 57.5, which figures represent the gain in weight, by kilogrammes, of the two lots. Herr Heyden, at Pommeritz, states a similar result. The value of cooking potatoes is also indisputable in cases when the tubers have been exposed to parasitic diseases, as of the peronospora, for example, since the operation makes the food wholesome. The employment of steam is also specially recommended in the case of fodder which, for some reason, is distasteful to cattle, and therefore liable to waste.

BUYING A HAY PRESS.

C. G. NIC, TEXAS.

In choosing a hay press, as in choosing a wife, each farmer should judge for himself. And in the former, as in the latter, it is manifestly unwise to take appearance as the only criterion. Consider the amount of work to be done and the power available. In pressing hay for home use, it is not necessary that the bale should be as compact as for marketing. And a cheap press which might make an acceptable bale for the farmer's own barn might be unable to press one which would command the highest price in the market. Speed is a very important consideration, but not so important as weight of bale per cubic foot. And the weight per cubic foot must not be obtained at excessive cost of men and power. It must be considered, also, whether the work will not prove too great a strain on the team which the farmer happens to have. Finally, the appearance of the bale is something, as also its shape for packing in a car. Besides honest differences of opinion among consumers which make testimonials of uncertain value, there is a serious point which affects their weight: They are often obtained under questionable circumstances. In fact, I have known men, more provident than punctilious, to give a recommendation for a consideration. A testimonial does not show on its face whether it was given voluntarily and in good faith or purchased for a price. Moreover, testimonials may be based on very limited experience or very careless observation. If a man has never used but one hay press, it does not signify anything for him to solemnly declare that it is the best he ever saw. If he has subjected it to only ordinary work, he is not competent to declare that it is equal to any emergency. For these reasons, which might be elaborated by numerous cases of actual occurrence, it may be seen that testimonials are not entirely trustworthy.

The Mississippi Agricultural Experiment Station has recently established a scale of points in selecting a press, which seem to be pretty well balanced. It is as follows:

Weight per cubic foot of bale	35 points
Speed	15 "
Shape of bale for packing in a car thirty-three feet long and eight feet wide	15 "
Number of men necessary	10 "
Horse power required	10 "
Strain of team	10 "
Appearance of finished bale	5 "
Total	100 points

The foregoing suggestions vary in value with the object and surroundings of the farmer, but they may serve as "pointers" to some man who would buy experience too dearly.

The Double Dwarf Sunflower.—This plant, the botanical name of which is *Helianthus multiflorus plena*, is a decided acquisition. Its many large, exceedingly rich yellow flowers brighten up the border like sunshine. They are very fine for cutting for use in large vases, or for decorating rooms for parties. We have used some in combination with the dark maroon and bright scarlet of the foliage of the Virginia Creeper, and the result was highly pleasing. The two gave a gorgeous coloring to the corner where we placed them. Both light up well, which is something that cannot be said of all bright colors. With us it has stood the last winter without protection.

HAY FARMING IN GEORGIA.

Diversified agriculture is gradually finding a foothold in the Southern States, where cotton has formerly been grown as the only crop ever since the ground has been cultivated. While nearly all of the great staple crops of the Northern and Middle States can be grown successfully along the eastern slope of the Alleghanies, none offer more tempting reward for the labor and outlay than does hay. Especially is this the case in the low lands along the Savannah river, where there are thousands of acres of land almost inexhaustible in its fertility, which, with proper management, could produce all the hay required in the South. A notable instance of a successful and profitable grass farm is that of Capt. W. H. Warren, near Augusta, Ga. The farm contains one hundred acres, ninety-two of which are permanent meadows. The first cutting takes place in the first part of the month of May, and consists of vetches. The product of vetch hay per acre is about one-and-one-half tons annually. About one month later, the Johnson grass (*Sorghum halapense*) will have reached a height of from three to four feet, when it is cut. Three or four subsequent cuttings are made during the season, yielding in all from three to four tons of hay per acre. The last hay crop of the season is made mainly from Bermuda grass. All the cultivation necessary is an occasional scarifying in autumn, for which Capt. Warren uses an implement specially devised by him, as seen in Fig. 3. This scarifier cuts the roots of the grass at intervals from six to ten inches, causing them to throw out new sprouts. After the meadows have been gone over with this implement, a top-dressing consisting of a compost of stable manure and cotton seed or lime is applied. No live stock is kept on the farm except the mules necessary for hay-making and carting.

During the haying season, which usually lasts from the first of May until frost, about ten men constitute the working force of the farm. During winter three or four men are sufficient to do all the necessary work, which consists mainly of baling and shipping the hay. A ready market is found in the flourishing city of Augusta, and from twenty-two to twenty-five dollars per ton is readily realized for the entire product of the farm. The owner himself does not live on the farm, but in Augusta, about two miles distant. He drives to the place every morning, and superintends the general working of the farm and sale of the hay. Every load of hay, before it enters the barn, is weighed on the platform scales; the amount of this is booked, as is also done with every load taken out, so that the proprietor can at any time ascertain the exact amount of hay on hand. Four hundred tons of hay have been cut in one year, giving a return of $9,000. As the cost of producing hay under this system is comparatively small, it is readily seen that the farm pays a very high percentage on the original cost, and yet many square miles of land of exactly the same original quality lie all around it, and are offered for sale at $50 and less per acre, and could easily be brought to the same productiveness and with but little risk of failure. The principal difficulty to be overcome in these lands is the occasional overflow of the Savannah river. To guard against this, Capt. Warren has surrounded his entire farm with substantial earth levees, about four feet in height. The building of these is probably the principal expense in starting such a farm, but after they are once erected in a substantial manner, they will last almost forever, with but little repair. To furnish storage for the large hay crops, an extensive barn was recently built. A perspective view of this is seen in Fig. 1, the ground plan in Fig. 2.

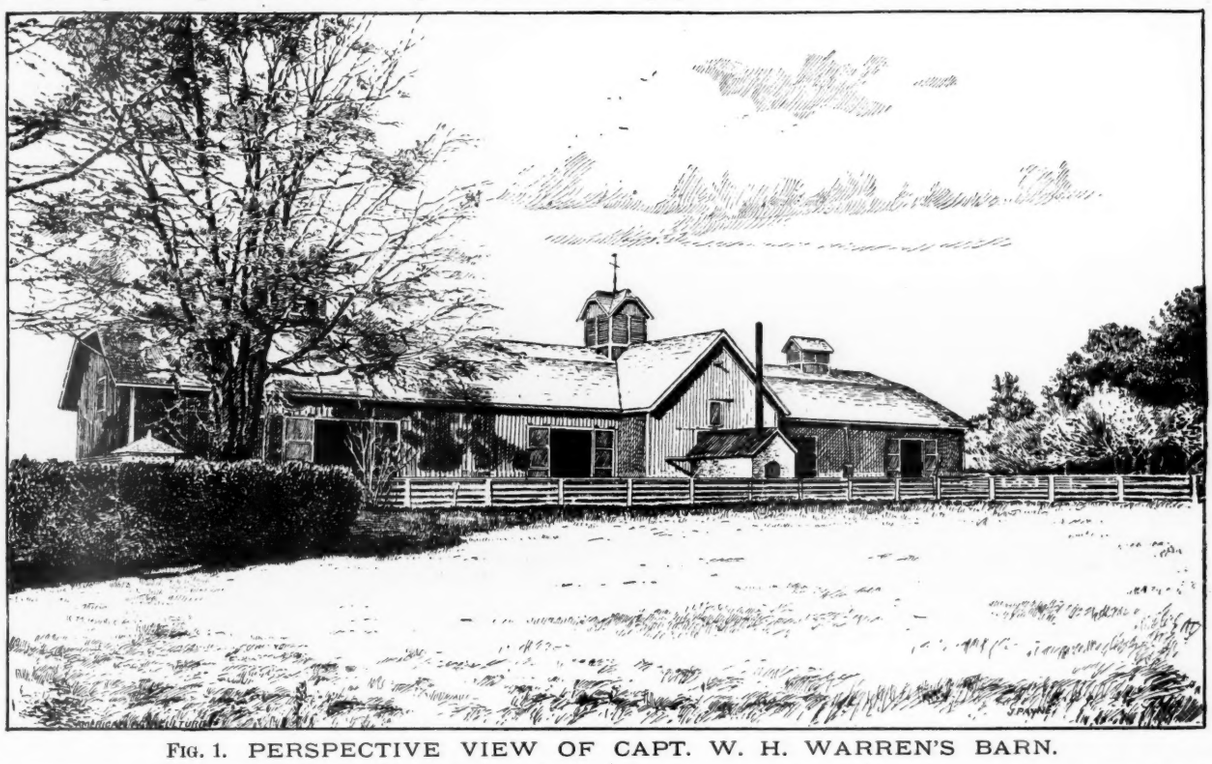


FIG. 1. PERSPECTIVE VIEW OF CAPT. W. H. WARREN'S BARN.

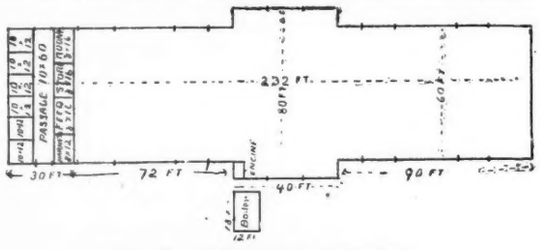


FIG. 2. GROUND PLAN OF BARN.

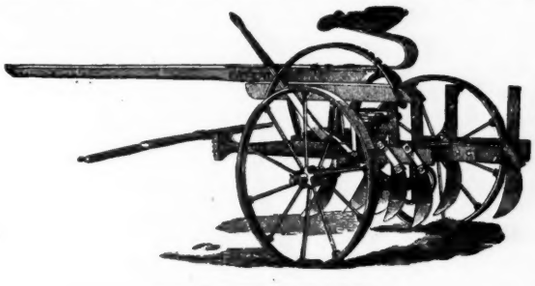


FIG. 3. THE SCARIFIER.

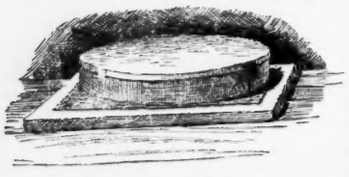
The barn is 232 feet long and sixty feet wide, with a transept forty by eighty feet extending across the middle. An area of thirty feet across one end of the floor is devoted to box stalls for horses and rooms for harness, feed and general storage. All the store rooms are lined with tin to exclude vermin. The remainder of the barn, from floor to roof, is left without partition or obstruction, save a row of posts down each side of the middle to support the roof.

This leaves a space of 12,920 square feet of floor room, or 258,400 cubic feet to the plates, for storage—a space ample for the storage of 500 tons of loose hay. The boiler house is a detached brick structure twelve by eighteen feet. The boiler supplies the steam for the engine, which drives the baling press, feed cutters, etc., the main shaft being one-and-seven-eighths inches in diameter and two hundred feet long. The barn stands on a foundation of brick piers ten feet apart each way. The sills are ten by ten inches, the posts eight by eight inches and twenty feet high on each side, and thirty-two feet to the top of each gable. The floor joists are three by eight inches, three feet apart from centers; the floor of two-inch plank throughout. The outer doors at each end of the passage way leading to the stalls and store rooms are ten feet wide and twelve feet high; all other outside doors are twelve by twelve feet to admit a wagon loaded with hay. The interior is left clear from floor to roof, except the space devoted to stalls and store rooms. This is floored over at the height of ten feet, and on the upper floor are the feed cutter and corn mill. The barn is covered with vertical dressed siding, and painted, and presents an imposing appearance.

MANUFACTURE OF BRIE CHEESE.

HENRY STEWART.

As in other countries, the manufacture of special kinds of cheese in France is confined to districts which offer some special facilities for the product of distinctly characteristic kinds of this article of food. Brie cheese is soft and rich, white or creamy in color and veined with blue, but not with yellow streaks; these latter always being found in an inferior quality of cheese. The shape of the cheese is flat and round, about sixteen inches in diameter and four inches thick. The mode of manufacture is as follows: Only the richest milk can be used for the best quality of cheese. The milk is drawn with the greatest care to secure absolute cleanliness and purity, and of course the management of the cows is to be such that this perfection is assured. It is at once carefully strained, and immediately curded by the addition of as much rennet as will bring the curd in from one to two hours. This is to prevent the escape of the cream by which the quality of the cheese would be determined. The vat is kept covered during this interval to prevent cooling and exposure to the air. This little detail is considered of much importance, and is one of these small things which, in all the business of the dairy, are not to be neglected. When the curd is set the whey is drawn, the curd is packed and is at once put in the mold. The molds made of earthenware, or sandstone, are placed on mats of straw or rushes to drain the curd, and the mats are laid upon slabs of beech wood a little larger than the molds, and one inch thick, as shown in the engraving. The curd is carefully lifted into the molds so as not to break it, by means of a small tin dish pierced with holes to drain off the whey. In fitting the molds the curd is heaped up and held by a ring of beech wood veneer, laid upon the mold, and which is removed when the curd shrinks within the mold. The molds are placed upon a draining table of oak, the surface of which has a number of small channels leading to a groove at each side, by which the whey drains off into a receptacle placed to receive it. When the cheese has become sufficiently firm, it is taken from the mold and "dressed" by smoothing off any inequalities of the surface, placed on the salting table and is sprinkled with the finest salt on one side. The next day it is turned and salted on the other side. Only the whitest salt is used, but some makers mix finely powdered charcoal with the salt so as to give it a grey color. The purpose of this is to keep off the cheese fly, which might by any possibility make its way through the windows carefully protected by wire gauze. If there is danger of the cheese giving way for want of sufficient consistence, a band of zinc is placed around it. During the salting and turning, the cheeses are laid upon osier frames, by which they are picked up and reversed. This process lasts one week or two, according to the warmth or coolness of the season.



BRIE CHEESE MOLD.

The drying is effected in a well-aired room, to which the cheeses are carried on the Brie frames. Here they are exposed to currents of air, and turned daily for a month, and less frequently afterwards. The cheeses are now covered with a peculiar fungus, at first white, but at length blue, with red points, which is quite frequently found upon the pans of milk and cream in dairies, and which is a peculiar parasite upon decomposing milk. After six weeks or more of this treatment the cheeses are often sold, but a large portion of the product is "fined" by a peculiar process, in which the cheeses are placed in vats or casks, alternating with layers of cut straw, and are left to undergo a certain fermentation, by which they become soft, melting, fat and of an extremely piquant and rich flavor. This is a very critical stage of the manufacture, and is only carried on when the cheese is held for special delivery to the dealers for immediate use; for if this process goes too far the cheese loses its delicate flavor and aroma, and begins to get strong and disagreeable. To prevent this the cheeses are sometimes wrapped in tin foil or some other air-proof covering. Brie cheeses are made of three qualities, very rich, half rich, and poor; the rich cheeses are made as above described, and the others with half skimmed or wholly skimmed milk. The last mentioned is ready for sale in fifteen days, while it is still soft.

The manufacture of this cheese brings in to the dairymen of a comparatively small district about $5,000,000 dollars annually. It is but little known in America, but if well made and put on the market in good condition there would no doubt be a large demand for it at satisfactory prices, as it is devoid of the pungent flavor, which as yet Americans have not grown up to, and perhaps never will, and is made in convenient form for domestic use.

Some years ago a manufacturer of Brie cheese, who was located in New Jersey, visited the writer for the purpose of consultation in regard to difficulties he encountered in the making of cheese of the right quality and flavor, in a part of New Jersey which was not by any means entitled to the credit of being a dairy district, and also in regard to the choice of a more desirable location both as regards the kind of soil and the peculiarities of the climate. Having had personal knowledge of the locality in France where this exquisite cheese is made to perfection, advice was given to move the dairy to Orange Co., New York, where these conditions of soil and climate more nearly approached those of that part of France lying between the rivers Seine and Marne, where the center of this special industry has been carried on for so many years, together with the production of milk and fat veals for the city of Paris. Every one who is acquainted with the very extensive milk and butter product of the favored American dairy district named will easily perceive the similarity of products between it and the French district described, and it happens that the soil and climate of both are equally similar. The removal of the dairy resulted in entire success. This instance is mentioned for the purpose of explaining the necessity for a wise selection of a locality for the manufacture of such special makes of cheese as that under consideration.

The soil should be dry and well drained, the face of the country rolling and hilly, giving ample freedom for the water to flow off after rains; fogs should be few and far between, and the air should be in brisk motion, tending to a beautiful breeziness. A calcareous soil and a sweet and tender herbage are also desirable, if not indispensable. Dampness is destructive to the fine flavor of the cheese, as in the curing of it certain kinds of molds or mildews are encouraged, which are exceedingly injurious, causing putridity before the desired flavor is produced.

IN-BREEDING AND INTER-BREEDING.

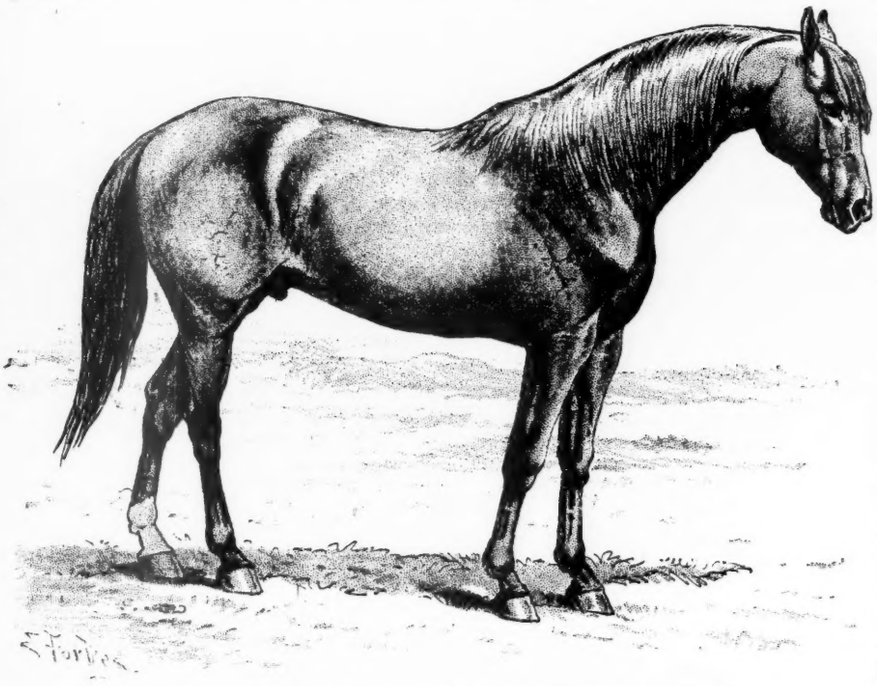
These terms have often been used by writers on breeding domestic animals, as synonymous; but they are really of quite a different signification. In-breeding means the mating of animals which are more or less closely related; while inter-breeding is the mating of cross-bred animals, that have no relationship with each other. For example, suppose a Shorthorn and Hereford are bred together, the offspring possesses half the blood of each. Next, suppose the same of a Sussex and a Devon, then the offspring of these two crosses bred together. This would be inter-breeding, their parents having no consanguinity of blood between them. It is a safe course to pursue; and for the attainment of special ends may at times prove quite an advantage to the cattle breeder. In-breeding, or breeding in-and-in, as it is more generally termed, is dangerous unless to a person of great experience, and who is a perfect judge of the perfections and imperfections of animals; then it may be advantageous. It is frequently followed by the unskillful with a loss of size, thrift, and constitution; and, finally, by barrenness. Fatal diseases are also to be dreaded; for suppose one parent is touched with a disease: in consequence then of its consanguinity to the other, this will be likely to be intensified in the offspring; and if both parents have the same disease, it will probably be doubled or quadrupled in virulence.

GERMAN SADDLE HORSES.

In Germany, as in many other European countries, the business of horse-breeding is largely under the authority and control of the government. The German war-horse of the Middle Ages was similar to, if not the progenitor of the heavy Flemish horses from which the French, English and Scotch draught horses have descended. In the days of chivalry, when the war-horse had to carry a knight encased in heavy steel armor, bone and muscle, rather than grace or speed were the requirements. When heavy defensive armor was driven out by the advent of fire-arms the ponderous horses were relegated to the humbler work of hauling, and a call arose for chargers of lighter weight, and greater spirit and activity. Arabians, Barbs and English thoroughbreds were carried to Germany and crossed with the heavy horses and mares of the country, and the modern improved horse is the result. It is described as follows by Theodore Heinze, an eminent authority: "The improved German horse presents in its general aspect a fine intelligent head, with well-set ears and clear vivacious eyes; strong lower jaw, a well-arched neck, fine at the throat-latch, and well-set on strong, sloping shoulders; high withers; straight back; strong loins; well-sprung ribs; smoothly rounded croup; fine, well-set tail; long muscular forearm and quarters; broad hocks; short, flat cannon bones; shapely, well-set pasterns and feet."

Frederick the Great was greatly interested in the subject of horse-breeding, and instituted a system of government stables which is still in vogue, with such improvements as have been suggested by time and experience. Among the establishments for breeding the Prussian full-blood are those of Neustadt, in Brandenburg, Graditz, in Saxony, and Trakehnen, in East Prussia.

Four distinct classes of horses are bred, viz: the Prussian half-blood, or cross of the Arab or thoroughbred English stallion on native mares; the blood-horse, which is a cross of the half-blood and English thoroughbred; the Prussian *Rennpferd*, or race-horse—a cross of the blood-horse and English thoroughbred; and the Prussian full-blood, the progeny of an Arab stallion and English thoroughbred mare.



THE TRAKEHNEN STALLION PERKUNAS.

The accompanying illustrations are portraits of a typical horse and mare of this class, both owned by Dr. Frederick Lange, of New York. The stallion Perkunas, is a dark chestnut or golden bay, sixteen-and-a-half hands high, and weighs, in fair condition, about twelve hundred and fifty pounds. He was foaled at Wenngotten, February 3, 1883. His sire was the royal stallion, Orion, dam by the imported Arab stallion, Ben Azet. Perkunas is a powerful stallion, fully answering the description above quoted. He has a very quiet, gentle disposition. The mare Hertha, illustrated, with her mate, Freya, is also owned by Dr. Lange. Both are black and so closely matched that it is difficult to distinguish them apart. The sire of Hertha was an English thoroughbred. Her dam was a cross of English thoroughbred upon a half-bred German mare.

THE TRAKEHNEN MARE HERTHA.

The Odds-and-End Corner. — Every one should have a corner of the garden in which to grow flowers to cut from. If you have not the flowers, you have the corner and the flowers ought to find place in it. We have a bed into which a little of everything goes. It is called the "odds-and-end" bed. Does a branch get broken off the geranium? We stick it down in this bed, and before we know it it has taken root and begun to grow, and before long we are cutting flowers from it. Are there some old house-plants that seem to have outlived their usefulness in pots, but which we do not want to throw away? The "odds-and-end" bed has a place for them, and when we find them renewing their youth and giving us fine blossoms for the daily bouquet we are glad that we gave them a place there. Here we plant the annuals that there is no other place for after a thinning out the beds; here we set out the bulbs that we are a little fearful about. Aristocratic plants and plebeian plants are all on an equal footing. There is a thicket of vines all along the fence, a tangle of plants all about the corner, and more flowers, we sometimes think, than we get from the show-bed in front of the house. It is the most attractive part of the garden, so utterly informal, and has a "sit-down-and-make-yourself-at-home" air about it. By all means, have an "odds and end" corner in your garden.

PEAR BLIGHT IN KANSAS.

The Rev. P. B. Peabody, Coffey Co., Kansas, sends us specimens of the twigs of pear trees struck with what has long been known in the Eastern States as "twig blight." Our correspondent says the disease appears early in the season, first showing itself in the dead leaves on the tips of the twigs, then a few leaves below diseased turn black, and sometimes the disease continues to descend until the entire branch is destroyed. Several branches of the tree may die during the summer, while others remain sound and apparently healthy, bearing a full crop of fruit. The description given by our correspondent shows conclusively that the species of blight destroying pear trees in Kansas is the same as that with which our fruit-growers in the Eastern States have had to contend with for these many years, and we may add, see their pear trees disappear in spite of all precautionary measures adopted, and remedies applied to their orchards.

Many labored essays have been written to show the cause and cure of this disease, and still, the question, "What is pear blight?" remains unanswered. The veteran pomologist, J. J. Thomas, in referring to this disease says, "The most formidable difficulty in cultivation of the pear, is the blight, known in its modifications, supposed or real, by the names fireblight, insect-blight, frost-blight and frozen-sap blight. The causes may be various but the appearances are the same—a sudden withering and turning black of the leaves on certain limbs during rapid growth and while the rest of the tree remains apparently in full vigor, the evil extending downward unless naturally or artificially checked till the whole tree is destroyed." The above description by Mr. Thomas is sufficient to show the effect and progress of the disease wherever it appears, but the cause he thinks "remains hidden." It is quite true, however, that recent investigations have shown the presence of a low form of organism known as bacteria, but whether they are the cause or the result of the disease is a question requiring further investigations.

Among preventives, Mr. Thomas writes, a good, firm and dry soil, and a site favoring early ripening of the wood, and adverse to late succulent growth, hold an important rank. Plant the trees on soil of medium fertility and maintain an annual growth of shoots from one to two feet in length by constant cultivation. The bark thus becomes more able to resist changes and diseases as the growth is moderately vigorous, healthy and matured. This above corresponds fully with our views in regard to the cause of blight, and it is sustained by an experience of nearly forty years and with many hundreds of varieties, not a tree of which was ever lost by this disease.

As for remedies, pruning away the affected twigs and branches as soon as the presence of the disease is discovered, is the only one that has withstood the test of long experience. Painting or smearing the stems and larger branches with raw linseed-oil is said to have been efficacious in some instances, but further and more thorough experiments are required before giving oil the rank of a true and certain remedy.

COMPLEMENTARY BREEDS OF FOWLS.

MISS H. C. DUDLEY, KENTUCKY.

It is sometimes desirable to keep two breeds of chickens, the one completing or supplying the deficiencies of the other. It is very easy to select from the numerous varieties of fowls, two kinds that will do this, now that they all are bred for the purpose of developing certain traits and characteristics. For instance, the Black Langshans and White Leghorns, the former to act as brooders and the latter for their well-known egg-production. These two breeds would be very interesting, I should think, the contrast in color, shape and general appearance being so very striking. My experience, however, has been with the Plymouth Rocks and Brown Leghorns. Others may be quite as good; I only selected these two because they were most easily obtained. The Brown Leghorns have the reputation of being almost non-sitters and everlasting layers, while the Plymouth Rocks are good brooders, excellent mothers, and their chicks grow rapidly, take on flesh readily and are thus especially adapted for early broilers. The Plymouths seem especially fitted to complement the Leghorns in another particular; with the same care during winter, a comfortable house, suitable food, etc., they will produce more eggs during cold weather than the Leghorns, which are very susceptible to cold. But as soon as the winter breaks, the Leghorns begin and continue laying with slight intermission through the spring and autumn. None of their precious time is spent sitting upon eggs, or "totin" chickens, as the darkies say. Their prowess in this line arouses the ambition of the Plymouths, who run an equal race with them until the brooding fever sets in, when their undivided attention is given to that. Occasionally, a pure Brown Leghorn takes a notion to sit, but it is scarcely worth while to give her any eggs. Sitting is too tame a business to suit her lively fancy, and she will probably leave the nest after a few days and go singing around the yard preparatory to laying. That she recognizes as her mission in life, and as she throws her whole soul into it, it is no wonder she excels. As mothers, the conduct of the Plymouth Rock is irreproachable, if we except the amiable weakness of being somewhat covetous. Each affectionate matron tries to adopt every chick she sees, and when many are put out at once it is difficult to prevent the most aggressive from taking the lion's share. I have known one to adopt every little stray chick she found, even though it was a week or two older than her own, until her brood was so numerous she could scarcely hover them.

Having two breeds of chickens to look after in the poultry-yard tends considerably to lessen the monotony of caring for them, especially two that are so different in every respect. From the first, the little Brown Leghorns show more activity and enterprise. Put the two kinds in a basket and the slender little brown heads are the first to peep out, and before you know it the chicks have found their way out and are running about over the floor as spry as young partridges looking for something to eat. In appearance, they are not unlike little partridges, with their bright eyes, shy ways and pretty heads striped with different shades of brown. When just hatched the males of the pure breed can be distinguished from the females by their darker color. With the Plymouths it is just the reverse, the females being much the darker. It is also interesting to notice the difference in their growth and manner of putting on their feathers. When only a week old the little brown fellows have quite respectable wings and pert little tails, and by the time they are three or four weeks old they boast a complete coat of feathers, while the Plymouths that are nearly twice as large can show only a few straggling quills. Their strength has all been spent in making flesh, and before they are two months old they are large enough for broiling. The Leghorns require at least three months, but then they are perfectly delicious, having plump broad breasts, small bones and delicate bird-like proportions. They might grow larger if they were ever still, but they are forever in motion, looking for something new, while the phlegmatic Plymouths eat their fill, lie down and stretch out their wings in the sunshine the hottest day that comes, and go to sleep.

CHICKEN SCRATCHINGS.

EMMA J. MELLETE, COLORADO.

Save all the bones from the table, put them in an old sheet-iron pan kept for the purpose, and brown them slightly. Then pound them on a rock with a hand-ax, or if you can afford it, buy a bone-crusher.

Bone dust should not be mixed with the chicken feed. It is too stimulating and is liable to cause enlargement of the liver in hens that are not laying. Put it where the hens can get it, and those that want it, and need it, can then eat just what they care for and no more.

Have a scratching place, and do not throw the chicken grain down on the cleanest, hardest piece of ground you can find, but among leaves, or in straw, and make the hens scratch. Prepare the scratching ground in a place that is sheltered from the wind, and let it be a permanent affair.

There is no profit in keeping mongrels in your poultry-yard when pure-bloods can be had at comparatively so small an expense. Uniform chickens are not only prettier and thus more satisfactory to care for, but they may be fed to a better advantage than can a flock which is made up of large and small.

Don't cheat yourself with the belief that once a month is often enough to clean out a chicken-house. It should be cleaned every day, or at the farthest, every three days. You might about as well leave the droppings under the roosts as to throw them just outside the door. Take them to the field, or under a shed, and mix with an equal quantity of dry soil.

Don't feed corn to a laying hen in summer; you might about as well give her poison. She will not only get too fat to lay but too greasy to eat. At this time of the year, a hen that can get an occasional bug, will lay well without a single bite of solid grain, provided she be well supplied with bran and shorts mixed up with milk, twice a day, and all the bones she cares to eat.

SYSTEMATIC CROSSING OF FOWLS.

MICHAEL K. BOYER, NEW JERSEY.

Where commercial poultry or eggs are desired, there is no pure breed that will bring as good results as a systematic cross. By systematic crossing is meant the crossing of two breeds that have qualities which, if combined, will surpass either one of them individually. Crossing gives hardier birds.

The writer is now crossing a Houdan cock on Partridge Cochin hens; Houdan on Wyandotte; Houdan on Light Brahma, and a dwarf Plymouth Rock on Leghorn. In one Houdan-Cochin cross, the chicks come out with the Cochin color, but the beard, a little of the crest and the fifth toe of the Houdan remain. The Houdan-Wyandotte is midway in color between the two breeds, but the beard, crest and fifth toe of the male is also there. In the Houdan-Light Brahma we have similar results. The Plymouth Rock-Leghorn cross has almost a universal Rock color, but the Leghorn head. Houdan males impart to breeds a vast benefit in flesh, and an improvement in egg qualities. The value of this breed is well known. It is of French origin, and the French are great epicures. They studied up a breed that would add a savor to the meat—they got it in the Houdan. Americans know that the Cochin, Wyandotte and Brahma fowls are good table birds and always command a ready sale on account of their fine flavor, and it occurred to us to simply take the French favorite and mate it with the American choice. We did so, and we believe we have, in consequence, a broiler that cannot be equalled by any other in the world. The cross of dwarf Plymouth Rock on Leghorn also comes out a good bird, an excellent broiler, but we have not as much confidence in it as with the above mentioned cross.

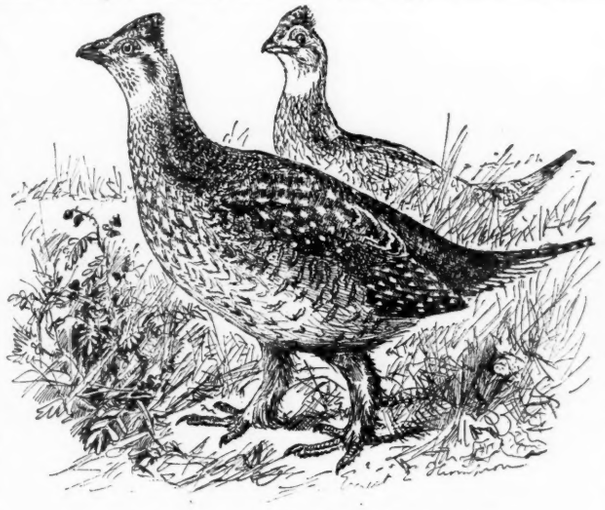


FIG. 1. A PAIR OF SHARP-TAILED GROUSE.

The Game is one of the best table fowls in existence, equalled only by the Houdan. Cross the Game upon almost any variety of yellow legs, and the result will be a success. Game on Houdan hens would "cap the climax." Plymouth Rock crossed upon Brahma produces large birds and good ones. Especially is this cross a success where the object is to obtain "roasters" for market or big chickens for the holidays. A poultry firm in New Jersey crossed a white-crested black-Polish cock upon Plymouth Rock hens, and showed remarkable egg records in consequence. The offspring retained the crest of the Polish, but had the plumage of the Rock. A friend in Canada once said that the finest and best cross he ever tried was a Langshan male on Plymouth Rock females. He wrote that the size of the young was astonishing and the flesh surpassingly good. Naturally we should suppose so, for no one has ever eaten a Langshan without praising it. Those who love turkey-meat agree that this breed imitates it to perfection. With the Rocks we are all familiar.

Now our advice to farmers would be, if you have a flock of good-sized common hens, do away with your mongrel rooster and get a Houdan cock or cockerel possessing a fine broad breast, and you will have more eggs and better eating birds. Commercial poultry is what the farmer is after, and we know whereof we speak when we advise the Houdan male. It would be working more for the interests of the poultry business if our poultry shows and agricultural fairs would offer special prizes for "systematic crosses." It is the only way to make market poultry profitable.

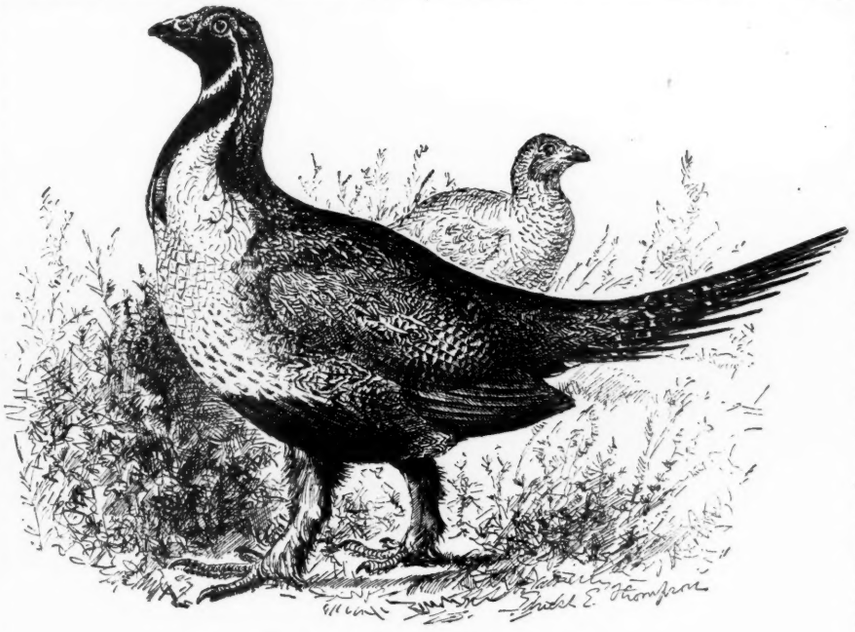


FIG. 2. A PAIR OF SAGE GROUSE.

GROUSE OF THE PRAIRIES AND PLAINS.

The avine family of *Tetraoninæ* or grouse is more numerous both in species and individuals, on the North American continent than elsewhere in the world. It includes a large proportion of the game birds which inhabit the prairies, plains, mountains and forests, from the Isthmus of Darien to the Arctic regions. The family includes the genus *Tetrao*, or grouse proper, and that of *Sagopus* or ptamigans. Of the former there are three species which inhabit the prairies and open country, and others which find their homes in forests or thickets.

THE SHARP-TAILED GROUSE (*Tetrao Phasianellus*) shown in Fig. 1 is found in the Northwest from Illinois to Alaska and the Arctic regions. The males attain a length of seventeen-and-a-half inches to end of tail; the females are smaller. The most remarkable peculiarity of the males is their habit of dancing. These grouse minuets are very quaint and droll. Every morning and evening for two weeks or more, a party of males meet in a spot where they have trampled down the grass, take their places, ruffle up their necks, throw back their heads, drop their wings, and go circling around one another, bowing, squatting, all the time keeping up a drumming sort of sound in lieu of other orchestral aid. The females, meantime, sit as wall-flowers outside the circle, gazing with admiring looks on the dance in which they take no actual part.

Their manner of nesting and rearing the young brood is very much like that of other species of grouse. The Sharp-tailed Grouse is hunted with dog and gun, its flesh being delicate and palatable.

THE PHEASANT-TAILED GROUSE (*Tetrao urophasianus*) or Sage Cock, portrayed in Fig. 2, is the largest of the American grouse, the full-grown males frequently weighing from five to seven pounds. They inhabit the elevated sage-brush plains and "bench-lands" of the remote Northwest, where they are very abundant. Their food consists principally of the buds and leaves of the artemisia or "sage-brush," which impart such a bitter flavor to their flesh as to render it unfit for food. The males, like those of their smaller congeners, woo their mates early in spring, by strutting and tooting. Spreading the tail like a fan and scraping the ground with his wings, the sage cock inflates the bare yellow throat until it is half as large as his body, emits a deep, hollow booming, like the sound produced by blowing across the mouth of an empty jug. When mated the female builds her nest on the ground, beneath a sage-bush, lays from ten to twenty eggs, and in about three weeks the chicks come out, vivacious and sprightly, hunting for small insects, as soon as they are dried from the shell.

THE PINNATED GROUSE (*Tetrao cupido*) or Prairie Chicken, is the most numerous and widely distributed of any American species of the grouse family. They were formerly found from the eastern coast of Massachusetts to the remote West. But with the advance of civilization they have become extinct in the States east of Indiana. So numerous were they in the open glades of Kentucky and prairies farther north and west, that sportsmen disdained to hunt them, and they became so tame as to haunt the barn-yards, and run fearlessly through the streets of villages. Boys and girls were employed at some seasons of the year to drive them from the fields, where they committed havoc with growing crops. But they have been thinned out by various means, and are nowhere superabundant. In the thickly-populated parts of the country a relentless warfare is kept up, not only by those who hunt them in a sportsmanlike manner, but also by boys and pot-hunters, who take them in snares. The Prairie Chicken weighs about a pound and three-quarters. On each side of the neck is a tuft of rather long feathers, beneath which is a distensible sac of naked skin. At the mating season, in early spring, the males inflate these sacs until they resemble a small orange in size and color, throw back the head, and drop the wing like a turkey-cock, and emit a peculiar booming or tooting sound. If two meet, there is an immediate conflict, which ends in the death or flight of the vanquished. This "tooting" may be heard at a distance of a mile. A short time after being mated the hen goes off by herself and builds a nest on the ground, and lays from ten to sixteen eggs. When the young are hatched the hen is a most devoted mother, watching with keen solicitude the downy, lively little brood. In case of danger she gives a warning cluck, the chicks scatter and hide themselves under leaves and tufts of grass, while the brown little mother exposes herself fearlessly in their protection, and resorts to many ingenious feints to draw attention from her chicks. About the middle of August the young have attained full growth, and are quite strong on the wing.

The old birds, having learned wisdom by sad experience, are very shy and wary. It is difficult for a dog to approach them within shooting distance without flushing them. The young are less knowing, and lie well to a dog. When flushed, the birds spring up with a noisy whirr, which is quite disconcerting to an inexperienced gunner, and start off in a straight, stray flight. Their favorite feeding grounds are stubble fields, where they may be found early in the day, after which they retire to places shaded by long grass or standing corn, where they wallow in dust baths and enjoy themselves until toward evening.

The open season for hunting grouse, so far as it is regulated by law, is as follows:

STATE OR TERRITORY.	SEASON OPENS.	SEASON CLOSES.
Arkansas	September 1.	February 1.
California	September 10.	March 1.
Colorado	October 1.	November 15.
Dakota	August 15.	January 1.
Idaho	July 15.	February 1.
Illinois	August 15.	December 1.
Indiana	September 1.	February 1.
Iowa	September 1.	December 1.
Kansas	September 1.	January 1.
Michigan	September 1.	November 1.
Minnesota	August 15.	October 1.
Missouri	October 15.	February 1.
Montana	August 15.	November 18.
Nebraska	September 1.	January 1.
Nevada	August 1.	April 1.
Ohio	November 10.	January 2.
Oregon	July 15.	January 1.
Tennessee	September 15.	March 1.
Texas	August 1.	March 1.
Wisconsin	September 1.	December 1.
New York	August 1.	November 15.
Utah	August 1.	March 15.
West Virginia	September 1.	February 1.

MARKETING FRUITS.

Large cities do not always prove the best markets for fruits. The best market is often passed by and the fruit sent to New York to be sold at a less price than it would have brought nearer home. Look well to the question of markets before the fruit is ready. If the fruit is to be consigned to a commission dealer, select the man, not the one who makes the greatest promises, but the one who has the best reputation for fair dealing and promptness.

Conform to the customs of the market in the choice of packages. Where the custom is to send berries in round boxes, those in square ones will meet with slow sale. Have choice fruits, such as selected apples, plums, etc., go in bushel and half-bushel crates. Let the crates be built of bright new stuff, and establish a reputation for neatness that will designate your fruit, even without a label. But do not omit to mark every crate, barrel or other package, plainly, with the name of the consignee, and with your own name. Make or purchase packages of all kinds well in advance, so that this important matter may not be rushed at the time when the fruit is ripening.

Too much care cannot be taken in assorting fruits. Some make three grades, the first and second for market, and a third to be fed out or dried or otherwise disposed of at home. Some of the most careful fruit growers make but two grades, the first and best only goes to market. All other is kept at home, or disposed of without having the name of the shipper on the packages.

THE JUNE BERRY.

Mr. W. F. Biddle, Anson Co., N. C., sends us a box of small currant-like fruit for name, and says that it is usually called a "currant" in his neighborhood. It is the same fruit known in some of our Northern States as service berry and June berry, but in most of the New England States as shadbush, because the trees or shrubs are in bloom at the time shad run up the rivers to spawn in spring. The botanical name of this fruit is *Amelanchier Canadensis*. The generic name is taken from the old Savoy name of the European medlar tree, to which the genus is closely related. The specific name of *Canadensis* was bestowed upon the species at a time when the greater part of North America was known in Europe as Canada. In England this North American fruit is called the "grape pear," because the small purplish fruit is produced in clusters or bunches somewhat resembling small grapes. There are many distinct forms or varieties of the June berry, and botanists are inclined to consider some of them as worthy of the rank of species, but as they run very close together, it is perhaps better to class them all as local varieties of an exceedingly variable species.

Some of the varieties grow to trees of moderate size, with stems a foot or more in diameter and thirty to forty feet high, while at the other extreme we have a low slender bush rarely four feet high and bearing fruit much larger than any of those growing in the form of large shrubs or trees. Some of the varieties have smooth twigs, others are covered with a white cottony pubescence when young, becoming smooth with age. The leaves are also variable in size, form and serrature of their edges, all of which would likely follow from wide distribution and naturalization in widely-different climates, for this tree or shrub in some of its varieties is found growing wild on the banks of streams from Hudson's Bay in the North, southward to Florida and westward to the Pacific.

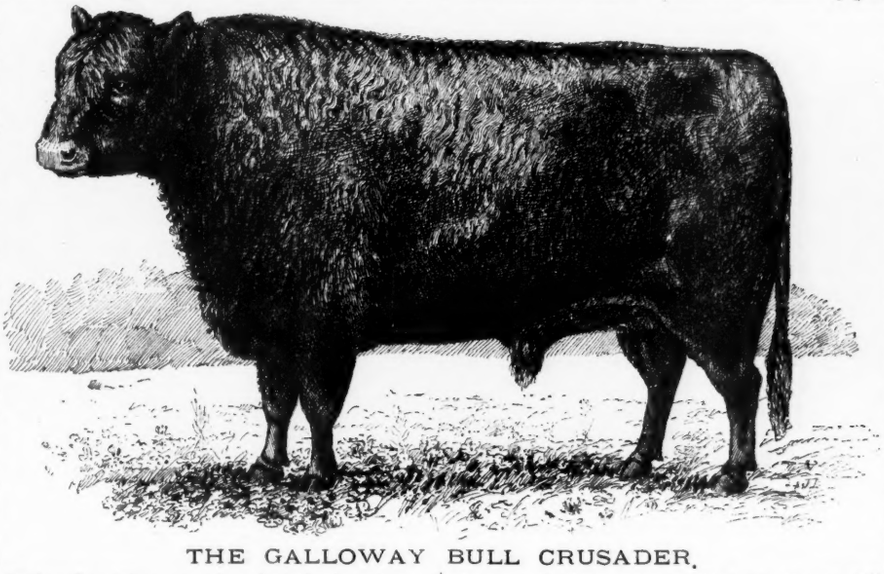
Several dwarf varieties have of late years been propagated by nurserymen and highly recommended for cultivation in gardens for their valuable fruit, which is produced in great abundance, but ripening so unevenly in the bunches it is rather a slow operation to gather it, in any considerable quantities. Birds are also very fond of this fruit, and in some gardens they will take every berry by the time it is fully mature. The plants are readily and rapidly propagated by suckers or cuttings of the roots, and they thrive in almost any kind of soil from clay to light sand, provided it is moderately rich. The fruit is generally of a purplish-red color, but we are informed that a pure albino or white June berry has recently been found in Missouri, where it is called the "white service berry." It is not claimed that the white fruited variety is any better than the purple, but it is an exceedingly interesting variation from the normal type of this fruit.

All the varieties are well worthy of cultivation for ornamental purposes, if not for their fruit, as we have few shrubs and small trees coming into bloom so early in the spring, or any that are more showy and desirable for cultivation in large or small gardens.

Ripening Cream for Churning.—A proper degree of acidity in the cream is required to produce the best quality of butter. It matters not how this acidity is produced, whether by time or the mixture of some form of lactic acid. It may be produced by the addition of sour milk to the fresh cream, in quantity of one pint of the milk to ten gallons of cream, and thorough stirring to diffuse the acid, which at once begins to act upon the sweet cream, and in twenty-four hours brings it into the right condition for churning. On principle this is precisely the same as mixing the newly-skimmed sweet cream with the older and sour cream, by which the former is acidified and the acid of the latter is neutralized to some extent. The practice of slowly stirring the cream in the jar when the fresh cream is added, is therefore not to be neglected, as it not only hastens the ripening of the fresh cream, but it retards that of the older.

GALLOWAY CATTLE.

The black hornless breed of cattle which takes its name from the ancient province of Galloway, in the southwestern part of Scotland, is one of great antiquity. The black polled cattle are referred to in a history of Scotland of the time of Alexander III, 1249. The agricultural report of Scotland for 1794-5 says: "The Galloway breed of black polled cattle is universally known and admired." It is further stated that at the close of the third quarter of last century, from 20,000 to 30,000 Galloways were annually driven from their native pastures, feeding as they went along the old, well-known trails, to the Norfolk and Suffolk fairs or markets, where they were bought up and fattened for the London market. They have always been regarded as a superior breed, their beef selling in the London market for a penny a pound more than that of other breeds. The Galloways possess in an eminent degree the "beef form"—straight level back, broad loins, round, well-ribbed barrels, full crops, deep chests, long quarters, clean, short shanks, with moderately fine bone, and mellow hides covered with a rich, thick coat of long, fine hair. The Galloways show their "claims of long descent" and centuries of pure breeding by their great prepotency. When crossed with any of the horned breeds the progeny are nearly all hornless. The present high standard of excellence of this breed has been achieved and maintained through the efforts of skillful and intelligent breeders on both sides of the Atlantic. One of the leading breeders of Galloways on their native heath is the Duke of Buccleugh, who has not only made his herd at Drumlanrigg famous, but has also by his active efforts in behalf of the herd book association increased the zeal of other breeders. There are many notably fine and well-bred herds in Scotland, as well as in Cumberland and other shires south of the Tweed. The Galloways were introduced into Canada more than forty years ago, by colonists of Scottish birth, who bred them pure, and found them well adapted to the climate. A few were imported to the United States about the same time, but the breed was not favorably received. This was partly from the lack of milking qualities, but still more from an absurd prejudice against the color. Until within the last decade, fine blocky Galloway steers from Canada could not command as good prices in the New York market as other cattle of similar quality, simply on account of this prejudice. But the triumphs of the black polls in the fat stock shows, and a better general knowledge of them, has changed all that.



THE GALLOWAY BULL CRUSADER.

Though they do not possess the superlative beef qualities which distinguish their congeners, the Aberdeen-Angus, the Galloways have many properties which render them peculiarly valuable on both sides of the northwestern boundary line. First, they are hardier than any other domestic cattle except the West Highland. Their dense coat of thick warm hair protects them so thoroughly from the cold winds that even a blizzard has very little effect upon them. They have been observed grazing quietly on the dried bunch-grass, with their shaggy faces to windward, while other cattle were drifting before the driving storm. It is claimed that they are fully as hardy as the wild bisons. Second, the absence of horns may surely be claimed as an advantage in these days, when the cruel saw is kept busy removing horns from cattle of other breeds. Third, their hides if removed during the winter months make robes scarcely inferior to those of the now practically extinct buffalo. It is easy to see that an animal which can "rustle" in all sorts of weather, fatten easily and produce a carcass of superior beef and a skin of extra value, is specially well adapted to a broad portion of this continent.

The Galloway Breeders' Society of Great Britain, of which Rev. John Gillespie is the zealous and efficient secretary, numbers in its membership many distinguished names. The American Galloway Breeders' Association, which comprises the United States and Canada, is also made up of enterprising and successful breeders. L. P. Muir, of Missouri, is the secretary, and is also a leading breeder. Our illustration is a portrait of the Galloway bull Crusader, bred by Thomas Biggar & Son, Dalbeattie, Scotland.

KICKING COWS.

F. C. CURTIS, WISCONSIN.

Cows acquire the habit of kicking and stepping about while the milking is performed, on account of timidity or pain; and this habit becomes chronic by rough and brutal treatment. Milking the cow is in a measure a surgical operation, and during the process if she cannot or will not be reasonably quiet, she should be confined by some restraint other than human muscle, for the cow's strength is the greatest. The weaker party gets angry, and rough treatment is the result; hence the necessity of some method of conveniently restraining the cow within the limit of human strength.

Cows stanchioned, and standing at a "hoist" do not kick with the right foot, which is the most objectionable one for kicking, but if she is bent on kicking, she soon puts her right foot in advance of the other, which shifts her greatest weight on the left foot, and then she is ready for kicking. My plan is to compel the cow to "hoist" and hold her there. This is best done by placing her in the stanchion, and taking a small rope or strap, about eight feet long, with a loop on one end; loop it around the left hind leg, and drop it down just above the dew claws, then pass it around the stanchion one-and-a-half times, draw the foot well forward and confine it there. This requires so little strength that there is no cause for anger even in the most irritable person. Some cows give up at once, while others struggle until they become accustomed to the restraint. This mode of confining the cow is particularly valuable to young heifers, all cows that step about while milking, and ordinary kickers. Sometimes I find it insufficient; in which case I place the rope around or above the hamstring joint and over the top of the stanchion, drawing the foot nearly or quite off the floor. If I find this is insufficient, which is seldom, I draw the left foot forward as first described, and then confine the other foot backward to a ring or post, and then the cow is compelled to stand. Confining the right foot backward is a much more muscular task than drawing the left foot forward, and requires a stronger rope. I have never found it necessary to do more than confine the left foot forward, with all cows I have raised, but I have bought unmanageable cows cheap and compelled them to stand while being milked. This method is quickly applied, and holds the cow in the right position to milk.

Persian Iris.—For gorgeous coloring and delicacy of texture, the Persian Iris is unequalled. Its petals seem as fragile as frost. It gives one the idea that they have been dipped into that fabulous old dye of Tyrian purple, after which parts of them took on the hues of the sunshine in which Nature put them out to dry. They have truly a raiment of purple and gold. Not all of them, though. Some are a soft lavender, veined with exquisite blue, with flecks of gold here and there, while one is a delicate gray streaked with black. All are charming. And they are hardy, and what we want is hardy, free-blooming, really fine plants for the border. We have too few of them. These newer sorts of Iris are exceptionally fine for cutting. If you cut a stalk on which there is one expanded flower and four or five buds, and the water in which you place it is changed daily, the undeveloped flowers will keep on growing, and

come out gloriously later, though they will lack something of the vivid coloring which the out-door flowers have. In this respect they are quite equal to the Gladiolus.

TANNING AND COLORING SKINS.

N. R. BRIGGS.

The first requisites for tanning are a fleshing-beam and knife. For the fleshing-beam, select a fine grained, hard wood slab, about five feet long, and ten to fifteen inches wide, as shown in Fig. 1. Have the round side up; put in two legs two-and-a-half feet long, and one foot from widest end, the other end resting on the floor. Make the top surface smooth and it is ready for use. A good fleshing-knife, like that seen in Fig. 2, may be made from an old drawing-knife, or piece of scythe, by grinding the edge down to a face about a thirty-second of an inch; this will give two edges to work with by reversing, and of sufficient sharpness to remove all fleshy substance from a skin.

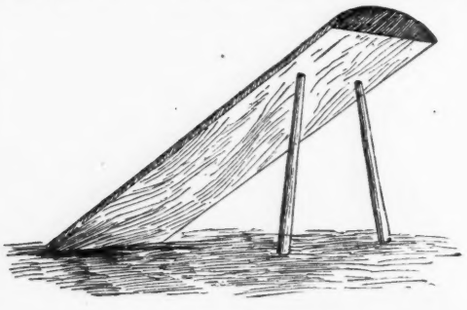


FIG. 1. FLESHING-BEAM.

Preparatory to tanning a skin, soak it well and break all hard spots on the fleshing-beam. To soak a skin, take four gallons of cold, soft water, half a pint of soft-soap, half an ounce of borax, half a pint of salt; mix and immerse the skins. For skins to be tanned with the hair or wool on, add three-fourths of an ounce of sulphuric acid. Soak from two to six hours. After soaking, if it is required to remove the hair or wool, immerse the skins in a liquor composed of five gallons of cold water, four quarts of slaked lime and four quarts of hard wood ashes. Let it soak in this from one to six days, or until the hair or wool slips off easily. Then remove to the fleshing-beam, and scrape off all the hair and flesh,—that is, remove with the fleshing-knife all fleshy particles that may remain on the inside next to the animal. Now remove and wash thoroughly in cold water, and with the knife scrape off all the surplus water. Fig. 3 shows the tub for soaking the skins.

FIG. 2. FLESHING-KNIFE.

Prepare the tan liquor as follows: To eight quarts of cold, soft water, add one-quarter of a pound of pulverized oxalic acid, and one quart of common salt. Dissolve well, and immerse the skins. Enough tan liquor should be made to cover the skins well. Light skins should remain in this liquor from three to four hours, and should be handled occasionally, that every part may be well wet with the liquor. Calf-skins, dog-skins and wolf-skins, should remain in the liquor at least forty-eight hours, or until tanned through, which can be told by cutting on the neck, the thickest part of the skin. On all of the finer furred skins, where extra softness is desirable, the following liquid should be applied to the skin after removing from the tan liquor. One pint of soft-soap, one pint of tanner's oil, or neat's-foot oil, one pint of alcohol. When this is thoroughly dried in, the skin should be dampened enough to finish.

FIG. 3. TUB.

All skins when drying are like full-cloth when wet; they contract or full up, and have to be stretched in finishing. To do this, take the skin before it is thoroughly dried, and place it upon the fleshing-beam over some yielding substance, or a sheep-skin, flesh side up, then take the fleshing-knife, and carefully push the edges of the blade stoutly in all directions over the skin, until it becomes stretched, soft and pliable.

To enliven the fur upon the skins that have been tanned and finished, take equal parts of scorched bran, and sharp, clean, white sand, or dry, hard wood sawdust, and rub well in the fur, then shake out.

TO COLOR FUR OR WOOL.

Take equal parts of pulverized, unslaked lime and litharge, mix to a thin paste with water, and apply with a brush. One or two coats will give a light buff color. By using several coats a beautiful, light-brown is obtained, every additional coat deepening the color. By adding a small quantity of ammonia and nitrate of silver, a beautiful black is produced. To color a bright orange on the wool of sheep-skins, for rugs, etc., wash out all grease from the wool, then take an ounce of picric acid to each skin; dissolve the acid in soft, lukewarm water, using enough to cover the skin. Use alcohol or vinegar, to set the color. A very pretty magenta color may be obtained by taking for each skin half an ounce of magenta crystals; dissolve in two quarts of boiling hot water, stirring until dissolved; then add warm water enough to cover the skins. The water should not be more than lukewarm when putting the skins in, and should be handled well, that the color may be evenly distributed. When of the right color, remove and set with a pint of vinegar, or alcohol, in water enough to cover the skins. Stretch while drying, to prevent shrinkage.

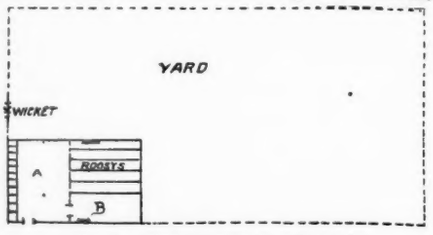


FIG. 1. THE ORIGINAL HENNERY.

EVOLUTION OF A POULTRY HOUSE.

The accompanying diagrams illustrate the manner in which a convenient and well-arranged poultry house and yard were evolved from very imperfect ones by S. D. Webster, St. Louis Co., Mo. He writes us: "I found on the place I purchased a chicken house and yard, arranged as indicated in Fig. 1. The only access to the yard was through the wicket shown in the diagram. The house could be entered only through the door near the corner. The house was divided by a cross partition into two rooms, the roosts in one and the nest-boxes at the further extremity of the other. The door had to be left open for the hens to reach the nests. The house was inconvenient in every way, and I remodeled it as shown in Fig. 2. The cross partition was moved forward, and a second one was built lengthwise, near the base of which the nest-boxes were arranged on a shelf about fourteen inches from the floor. A door was placed on the side of the house opening into the main yard, and another into the small yard, which had been picketed off for chicks. A small house was built for chickens which had outgrown the motherly care of the hens, opening into a picketed yard by itself. The nest-boxes are movable, each one furnished with a lid which can be lifted to remove the eggs. Each box is halved down at one end, as shown in Fig. 3, to admit the hen, but when she wants to sit, the box is turned around, and she enters it from the room C, Fig. 2, while she cannot be disturbed by the other hens. Food and water are kept in proper receptacles in both rooms, and ample dust boxes in the open space of the room B." The advantages obtained by the changes are clearly seen by a study of the two diagrams.

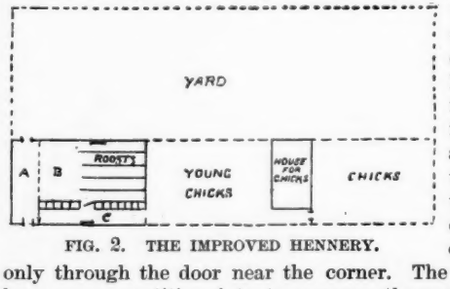


FIG. 2. THE IMPROVED HENNERY.

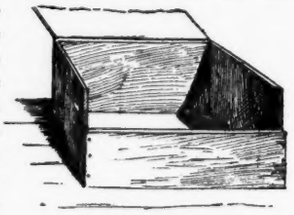


FIG. 3. NEST-BOX.

Gladiolus Supports.—The best support for gladioluses are wires stretched from posts about two feet high, driven into the beds at each end. They are not seen, and the flower stalks get all the support that is required from them, without tying, if cross-wires or strings are used to prevent the stalks from falling down between

the rows of wire. Where this plant is used in groups, instead of rows, one stake in the center is all that is necessary. We wind strings about the different stalks and fasten them to the stake, This allows the stalks to keep their naturally graceful positions. which would not be the case if each one were tied firmly to a support. The danger is not of the breaking of the stalks above the base of the plant, as some suppose. They are seldom broken except at the junction of stalk and bulb. If once beaten down by a strong wind they never assume an upright position of themselves.

ABOUT NOZZLES—THE RILEY NOZZLE.

Everyone who is interested in the cultivation of plants, whether as farmer, or grower of the products of the fruit, vegetable or flower garden, must have noticed the remarkable increase of late years of destructive insects. This increase is due to the co-operation of several causes. Firstly, if not chiefly, the most needless and most easily controlled is the "feathlerless biped" who, not exactly a boy, nor yet a man, is large enough to carry a gun, and goes about killing everything that wears a feather. Insect-eating birds which are busy filling their space in Nature are indiscriminately killed by this two-legged nuisance, who appears to have no place in the beneficent round of creation. Another cause of the wonderful increase of insects is that cultivation destroys their native food plants, and in the plants of cultivation they find more acceptable as well as more abundant food. A most striking example of this is the Colorado potato beetle. Not many years ago this beetle was confined to a native *Solanum* in Colorado, and only known in the cabinets of entomologists. When the western edge of civilization reached its native home and brought within its reach a cultivated *Solanum*, the potato, and a plenty of it, how quickly the few became legions, which sweeping eastward soon reached our coast and threw Europe into a state of alarm, and several countries made preparation to repel an invasion. These two causes, absence of birds, and abundance of food, are sufficient to account for the great increase of insects, an increase which makes the destruction of insects a part of the regular business of every cultivator, who must fight with his insect foes for his share of nearly every crop.

The matter of insecticides is now well systematized, and their application is greatly simplified and more effective. The so-called "Atomizer" at first employed to distribute perfumes has been found of great service in the application of liquids to plants. In this a small stream of liquid is struck by a current of air and broken up into a fine dew or mist. Indeed, the term "Atomizer" well describes its effect, which is to break the liquid into atoms, or, so to speak, a liquid dust, so fine are the particles into which it is separated. In the application of insecticides, the quantity required is very small, but its even and general distribution is of the greatest importance. Dr. C. V. Riley, entomologist to the United States Department of Agriculture, has in the course of his labors devised a nozzle which, attached to an engine or pump of any kind, will deliver the liquid in the most desirable condition of spray.

In a recent bulletin issued by the Department of Agriculture, Dr. Riley gives a description and illustrations of the original Riley nozzle with modifications of it made in France and elsewhere. This

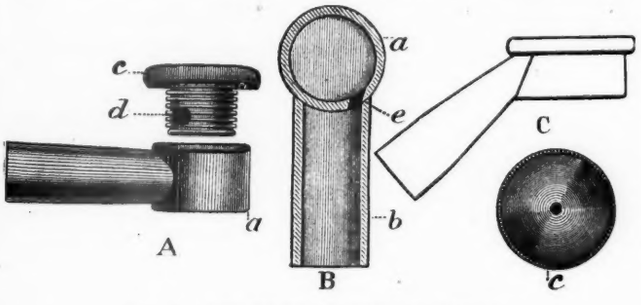


FIG. 1. THE RILEY OR CYCLONE NOZZLE.

invention, Dr. Riley distinctly states, is public property, and patent claims involving the principle may be ignored by the public. This nozzle is also called the "cyclone nozzle," a term applied to all nozzles involving the same principle, to which the name Eddy chamber nozzle is also given. Various modifications have been made of this nozzle, at home as well as in Europe, Australia and New Zealand. These are distinguished by the names of their various inventors or makers. The original form is properly called the "Riley nozzle," by which it is widely known abroad. The typical Riley nozzle is shown in Fig. 1. The descriptions of this and other engravings are quoted essentially from Mr. Riley's article above referred to. The engravings themselves are from the original plates.

THE TYPICAL RILEY NOZZLE.

At A in Fig. 1 is shown the typical small-stemmed nozzle with the screw cap *c* above the chamber *a* as it appears when removed from the chamber. The circular body of this cap is chambered out inside, and screws down to the bottom of the chamber *a*, the orifice *d* coming into juxtaposition with the orifice *e*, shown in the section at B, in the wall of this chamber. These parts must meet accurately when the lid is screwed down, or the working of the nozzle is interfered with. To overcome this, somewhat, a transverse slotted opening is sometimes made at *d*. Most of the French modifica-

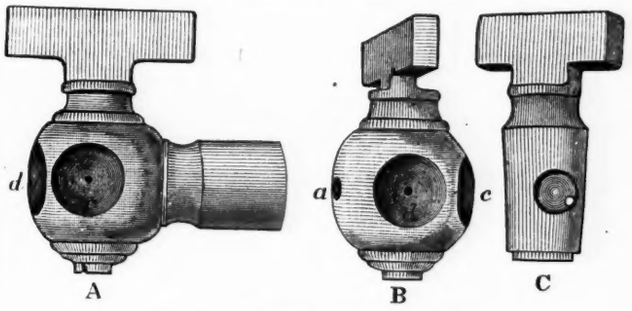


FIG. 2. THE UNIVERSAL SPRAY TIP.

tions make the cap to screw over the outside, but this necessarily increases the vertical depth of the chamber and considerably alters the character of the spray, tending to make it coarser, but at the same time to give it greater propulsive force in a direct line from the discharge orifice.

For a fine mist of spreading spray, the best results are obtained with a shallow chamber like the one shown. The face of the cap should be of fairly heavy metal, countersunk on the exterior surface, leaving but a thin plate of metal at the orifice of exit. The inner surface should never be countersunk around this orifice, as is often done by manufacturers. The section at B shows the construction of the stem and chamber and the tangential entrance orifice at the bottom of the chamber. At C is shown a view of the upper surface of the cap *c* and also an outline drawing of a chamber placed at an angle of forty-five degrees with the stem. This last is an important modification, especially when spraying over the head, as by slightly inclining the supporting-rod the spray can be delivered upward in a nearly vertical direction. The size of the stem is merely a matter of convenience to suit the desire of the user. In the work of the division this has been made of suitable size to insert in five-sixteenths or one-quarter-inch rubber tubing, as these are found the most convenient sizes of discharge pipe to use. A wire wrapped tightly around the tube over the stem makes a perfectly tight joint, and answers all purposes. Of late, however, when it has become desirable to use the different styles and sizes of nozzles for the many and various purposes to which spray machinery is now put, a stem carrying a female screw of the style to fit a three eighths-inch nipple has been used. This nipple is made with a stem to insert in the size of the discharge pipe which it is designed to use, and a slight shoulder permits of more secure fastening of the rubber by wire, which is very desirable to prevent disconnection when great force is used for finer sprays.

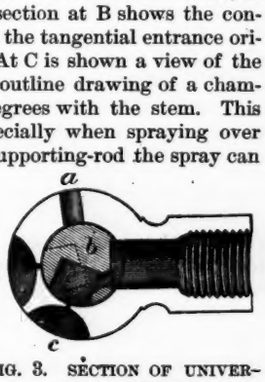


FIG. 3. SECTION OF UNIVERSAL SPRAY TIP.

A discharge orifice of about one-sixty-fourth-inch (0.4 m m) is the proper size for producing a very fine spray, while for the coarser sprays one-sixteenth-inch is commonly used. Between these two dimensions variable volume to suit most purposes will be obtained. For heavy suspension or clogging mixtures the orifice may be still larger.

MODIFICATIONS OF THE EDDY CHAMBER SYSTEM OF NOZZLES IN THE UNITED STATES.

But one modification of sufficient importance to merit attention has appeared in this country, viz: The Universal Spray Tip. This nozzle is the invention of John Crofton and L. D. Green, of California. The illustration Fig. 2 shows its general features. It is shown entirely at A and is in general form similar to a water cock.

The outer or distal end of the nozzle is shown at B, and the plug at C. The spherical body of the nozzle has on its outer surface two countersunk depressions, *c* and *d*, and at the bottom of each is a small circular opening communicating with the orifice in which is inserted the plug C. It has also a larger straight orifice, *a*, which communicates with the center orifice. The plug C has two cavities drilled into the body on adjacent quarters, and connected by a small orifice which passes from the shallower cavity tangentially into the base of the deeper one. This will be better understood by reference to Fig. 3, in which is shown a section through the center of the nozzle. This cut represents the water entering the shallow cavity in the body of the plug *b*, passing through the cavity e, and issuing at *c*. By turning the plug rightward, as indicated by the dotted line, the discharge can be delivered at *d*. Thus it discharges sidewise or straight ahead, at the will of the operator. By turning the plug leftward from the position shown in the cut, the discharge will be reversed and delivered at *a*, which is a larger straight orifice and permits the washing out of any sediment or obstruction. When turned half way around rightward from the position shown in the engraving, the nozzle is closed.

LATE SUMMER MARKET GARDENING.

JAMES K. REEVE, OHIO.

In the market garden, in August, the preparatory work for the coming year begins to intrude upon the closing work of the present one. After the turnips are sown, spinach should be planted for the early spring market. In dry weather the seed is somewhat difficult to start, and if it does not germinate at once will usually perish. Consequently, the ground must be well prepared, and the seed sown at once upon the freshly-stirred surface, and should be pressed in with a heavy roller. It may be sown broadcast or in drills—the latter being the most workmanlike manner. The prickly-leaved varieties are best for fall sowing, being hardier than the other kinds. North of the latitude of New York it should be protected by a light covering of coarse litter, put over it when the ground begins to freeze.

To have early green onions in the spring, before those grown from sets are ready to market, preparation must be made now. The sets of potato onions may be planted, or old onions left in the ground, which, as soon as the ground thaws, will send up numerous green shoots, each having a small, tender bulb. It is a good plan to leave the smaller bulbs of a good-sized onion patch, just as they have grown during the season. Cultivate the rows lightly in the fall, and cover them with coarse manure. The onion is a heavy feeder in every condition, and the rains and snows of winter will carry the most valuable part of this manure down where it will be assimilated by the bulbs. The shoots will push up through the mulch in the spring, and will be tender and abundant. This crop costs but little in the way of labor, and is off so that the ground can be cleared in time for almost any of the early vegetables.

Celery must be given particular attention, this month. Handling of that which was set out earlier, and which is intended for fall market, should be begun. The soil must be drawn up about the plants gradually, taking care that none falls into the center. About four inches of soil may be drawn up at the first operation, and as much at each subsequent handling, if the plants are making vigorous growth. Plants for the winter supply should be out by the middle of the month. Shear them back to not more than six inches in height and it will promote a stocky growth.

Sweet potatoes should be ready for market now. If good prices can be obtained (we usually get five cents per pound for the first) it will pay to open the hills and take the largest from each. This can be done, if the ridges have been kept in good order, by merely inserting the hand in the hill, and without causing much disturbance to the balance of the growing roots.

Tomatoes, which will also be ready this month, must not be put into the market-wagon in any bulk. Wide, shallow baskets, holding a half-bushel each, without being full quite to the top, make good packages. These can be placed two or three tiers high, and so a considerable quantity carried. If put in deep packages the fruit soon becomes bruised by its own weight, and presents an unattractive appearance.

This is the last opportunity for looking over the ground to see if the arrangements are ample for a full supply of produce during the remainder of the season. The adage that "He is furthest from market who has nothing to sell," holds good with the market-gardener. It is discouraging to find, in the middle of the season, when the trade is well established, and the hardest part of the work done, that the supply of stock is likely to run short. If not enough late sweet corn was planted, the supply may still be supplemented by putting in some of the very early dwarf kinds. If there are no unduly early frosts there will be a good chance of getting roasting ears from it. Bush beans may also be planted yet, the Red Valentine being best for this season. Peas, of the earliest varieties, may be sown as late as the middle of the month, for the fall crop. Sprout them slightly by mixing with rich, moist soil, and then sow thickly in the row, and there will be little difficulty in securing a good stand. A good mulch will help to retain the moisture, and will give a good place for them to fall over on, instead of lying in the dirt. For "greens," which, in some communities are as salable in autumn as in spring, sow early beets thickly in drills. Commence pulling and selling them in bundles as soon as the roots begin to swell, or when they are as large around as a lead pencil.

EXTRACTED OR COMB HONEY.

A. H. DUFF, KANSAS.

The greatest yield of honey can be obtained by extracting, as it can be extracted from the combs without awaiting their sealing up. It seems to take the bees about as long to seal over the combs as to fill them with honey. We can, therefore, get double the number of pounds of extracted honey that we can of comb. Besides keeping the combs emptied of their contents, there is the additional advantage of keeping the bees working right along filling the combs. Bees thus treated are not so liable to swarm, as they have at all times abundance of room for storing honey. It is true we may give them large surplus room, but when this is filled with comb honey, it is not completed. Several days are necessary to ripen the honey and seal the cells. With limited storage room they make preparations to swarm, and then plentiful storage room will not prevent it. Of the two methods of producing honey, comb and extracted, the latter does not require more than half the labor. It has been said that extracted honey does not bring as high a price. But in the majority of cases the apiarist is making more money from extracted honey because he is producing three or more pounds to one. True, there are a few specialists who make the raising of comb honey a study, and those probably receive the greatest profits. But the masses find much difficulty in producing comb honey, when they can easily produce large crops of extracted. To succeed properly in raising profitable crops of comb honey requires the greatest skill and study of anything connected with the apiary. It is beginning at the wrong end to raise comb honey first, instead of the more simple and easy method of using the extractor.

NOVEL HAY-BALERS.

A unique method for baling hay was invented some years ago, and as the patent has just expired, perhaps our readers may be glad to put it into use in some way. The idea is to collect hay, straw and other material in a roll by means of a small revolving cylinder, or on anything which can be removed. The roll must be in the form of a spool of silk—that is, much larger in diameter than in width. A number of these sections, which are scarcely more than disks, are then laid one upon the other in a cylinder and pressed. With the many cider and other cheap presses being shipped to all parts of the country, our readers will see at a glance that it will be an easy matter to utilize them for pressing hay in this way. Wires or cords must be laid in the cylinder before the hay is put in, and the follower should have slots across its lower surface, that the cords or wires may be tightened before it is loosened. The cylinder may be a roll of sheet-iron hooped or a tightly-bound wooden arrangement. The spindle for collecting the hay may be revolved by horse, windmill or steam power, and several rolls may be formed at once on the same shaft.

Good Use for House Slops.—If you save all the slops from the house, the wash-water, and suds of sundry occasions during the week, you will find that you have a supply of nutriment at hand to draw upon which is far richer than you had any idea. It will not make a poor soil permanently rich, but it will afford sufficient nutriment to nourish such plants as you grow in it during the summer in a very satisfactory manner. We planted some annuals on a stiff clay that had been thrown out of a cellar. We water them regularly with suds and slops, and they surpass in growth and floriferousness those grown in the garden.

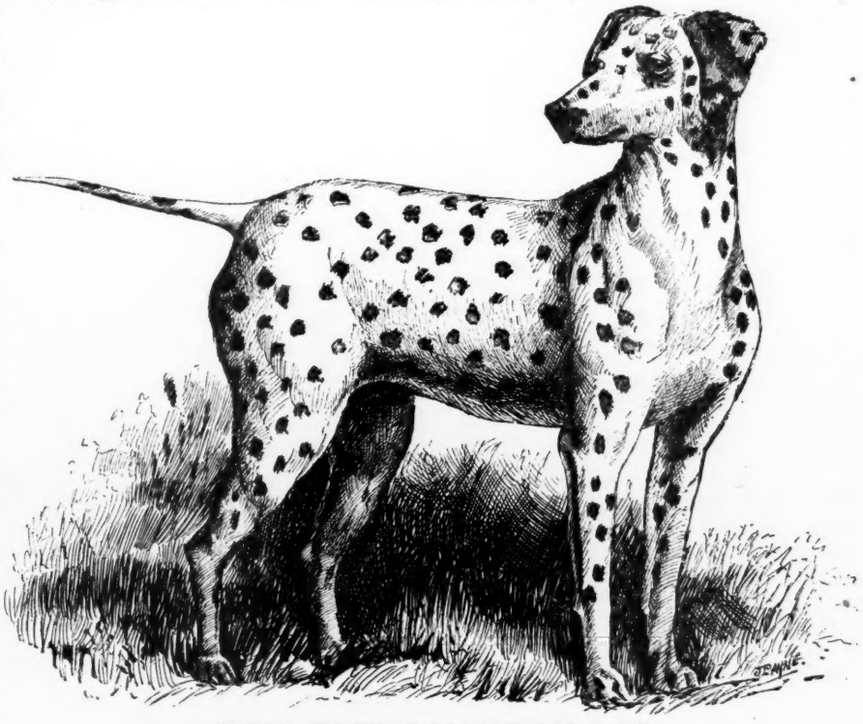
COOLING MIXTURES FOR DAIRY USE.

It is very easy to make heat but not so easy to neutralize it. By using ice we can reduce the temperature without much trouble, but few persons ever think how or why the cooling effect is produced. It is a chemical law that when fluids are solidified they give out a large amount of heat, and the same law applies to vapors condensed to liquids. The heat required to melt solids is drawn from sources which give it out, and are cooled in proportion. To melt one pound of ice at a temperature of 32°, one pound of water at a temperature of 172°, or a scalding heat, is required. The result is two pounds of water at 32°, 140° of heat having been abstracted from the water in this change. If instead of hot water, warm milk at a temperature of 80° be used, the melting of one pound of ice would reduce three-and-a-half pounds of milk to a temperature of 40°; but if the milk is first cooled in the air to 60° seven pounds may be cooled to 40°, and the water will still remain at 32°. Consequently, more milk will be cooled by the warming of the water to 40°, and this will depend on the quantity in the tank. After the ice is liquefied the quantity of milk cooled by it is proportionate to the quantity of water, and ten pounds of the water will cool one pound of milk 5° in becoming 5° warmer itself, both then being of the same temperature. This principle applies to several other substances besides ice. All soluble crystallized substances have the same effect to various degrees. If salt is mixed with broken ice, the ice is melted and so is the salt, and the double melting produces water at a temperature of zero. Four ounces of sal ammoniac and saltpeter, powdered and dissolved in water, will reduce the temperature 40°; a mixture of glauber salts (sulphate of soda) and hydrochloric acid will reduce the temperature 82°. These are several substances of the kind which may be of practical use in the dairy. The mixture of salt and ice in a tank will greatly economize the use of ice where it is scarce, and salt can be procured for less money than the ice can. Evaporation of moisture also produces cold, and a cloth kept constantly wet with dripping water, wrapped around a deep pail filled with milk, will cool it rapidly to several degrees below the temperature of the water used. A similar cloth over a window opened to admit air for ventilation will cool the dairy considerably.

THE DALMATIAN OR COACH-DOG.

In form and size the Dalmatian dog closely resembles the English pointer. There is a statement prevalent among writers on canine subjects that in the country of their original nativity they are trained and used for sporting purposes, and are staunch and useful. However this may be, it is certain that in this country and in England no one ever thinks of them as field-dogs. They show an instinctive and extraordinary attachment to horses. Where one of them is kept around a stable, he soon makes friends with the horses, and the attachment between them and the dog seems to be mutual. The dog is likely, however, to form a special friendship for one horse or a span, hovering near their stalls while they are in, following them through the streets when they are driven, and in one instance known to the writer, the moment the horses stopped, the dog would spring up to the whiffletrees, mount the horses, and curl down quietly on the back of one or the other, until the driver resumed the reins.

The Dalmation dog is marked in a striking and beautiful manner with black spots on a general color of white. The spots should be from an inch in diameter down to mere specks. The late Henry Ward Beecher wittily compared one of these dogs to "an animated blueberry pudding." Whoever has seen the New England article, the white pastry spotted by the dark juice of the fruit, will readily recognize the aptness of the comparison. It is this very quaintness and singularity of appearance which gives the dog its special nature as an attendant on a carriage or inmate of a stable.



WELL-BRED DALMATIAN DOG.

FALL FEEDING FOR COWS.

Time is to be taken by the forelock, and to prepare early for the fall feeding of cows is carrying out this wise principle. When the season is about to end, feed is usually scarce and poor, because preparations are not made for it in good time, and the product of milk falls off at the very time when it should be kept up for the winter profit. Once a cow loses milk it is very difficult, and in many cases, impossible to restore it. Hence, fresh, succulent food must be provided for. The best recourse is a field of aftermath, grass or clover, or a pasture which has been reserved especially for the purpose. It may be too late now to remedy a failure for the present season, but the warning should be heeded in time for another year. Still, something may yet be done. A planting of early kinds of sweet corn, sown in rows eighteen inches apart and three inches apart in the rows, will very soon afford very acceptable feed. Millet may be sown for pasture; oats sown in August or September will make the best of pasture for the early autumn, and rye will serve to follow after the early frosts. If no other way can be found, some of the best hay, with a liberal ration of corn meal, should be given as soon as the outdoor forage has become scarce. Later, the small potatoes may serve as succulent food along with the hay. Malt sprouts steeped in water and mixed with cut hay have increased the milk-yield more than pasture has done. This food is very pleasant and palatable to the cows, and exceedingly nutritious and productive of rich milk. It can be purchased cheaply in summer and fall when it is not much in demand. Bran and shorts have great value both as food products and for enriching the manure, and cotton-seed meal fed with care and judgment is valuable. Apples are worth more to feed to cows than for cider.

Brush for Sweet Peas.—Whatever may be said in favor of fancy trellises for climbing plants, it is a fact that the sweet pea really seems to do better when given brush to clamber over than it will on any other support that we have ever provided for it. It seems to have a decided objection to anything formal. It will not cling to a string well. It must have something which it can lean upon rather than cling about. If you want late flowers, be sure to keep your plants from forming any seed, and cut the tops back very nearly one-half in August, giving, at the same time, a good top-dressing of manure. We are glad to notice that this fine old flower is becoming a favorite with those who have hitherto thought nothing so desirable as roses and other flowers of that class.

NITROGEN OF VEGETATION.

JOHN J. WILLIS, SUPERINTENDENT OF LAWES AND GILBERT'S EXPERIMENTAL FARM, ROTHAMSTED, ENGLAND.

Having considered in our previous article Sir J. B. Lawes' and Professor I. H. Gilbert's evidence by direct experiment as to whether the higher plants, or soils, by the agency either of micro-organisms or otherwise, fix the free nitrogen of the atmosphere, we pass on to consider the various modes of explanation adduced.

GAINS OF NITROGEN.

(1.) That combined nitrogen has been absorbed from the air, either by the soil or by the plant. (2.) That there is fixation of free nitrogen within the soil by the agency of porous and alkaline bodies. (3.) That there is fixation by the plant itself. (4.) That there is fixation within the soil by the agency of electricity. (5.) And, finally, that there is fixation under the influence of micro-organisms within the soil. The balance of evidence recorded is considered, however, by the authors to be undoubtedly in favor of the last-mentioned mode of explanation, and that unless there be experimental error, it is pretty clear that there is fixation within the soil, under the influence of micro-organisms, or other low forms.

LOSSES OF NITROGEN.

Much of the investigation that has been undertaken in recent years, has been instigated by the assumption that there must exist natural compensation for the losses of combined nitrogen which the soil suffers by the removal of crops, and for the losses which result from the liberation of free nitrogen from its combinations under various circumstances.

The loss by cropping, under the usual conditions of more or less full periodical returns by manure, is estimated by Messrs. Lawes and Gilbert to be about twenty pounds per acre.

The loss by drainage, however, is much greater and in some cases considerable. There may also, under some circumstances, be loss from the soil by the evolution of free nitrogen. Such loss may take place in the manure heap, or in soils very heavily manured, as in market gardening. But in ordinary agriculture such excessive manuring seldom takes place. Loss may also take place when the soil is deficiently aërated. But the balance of evidence is against the supposition that there is a constant and considerable loss by the evolution of free nitrogen from arable soils which are only moderately rich in organic nitrogen, and which are fairly drained, either naturally or artificially.

ACCUMULATION OF ORGANIC NITROGEN.

The well-known accumulation of nitrogen which takes place in the surface soil, when arable land is laid down to grass, is not conclusively explained. At the same time, there is quite as much evidence in favor of the assumption of a subsoil, as of an atmospheric source. At Rothamsted, for example, there is, in soil and subsoil, to the depth at which the action of deep-rooted and large nitrogen-accumulating plants has been proved, a store of about 20,000 pounds of already combined nitrogen per acre. It is true that while many other soils and subsoils will contain as much, or more, many will contain much less. Still, if further investigations should confirm the indications, that in the case of the deep and strong rooting, and high nitrogen-yielding *Leguminoseæ*, much at any rate of this nitrogen has its source in the combined nitrogen of the subsoil, and that the accumulation in the surface soil is due to nitrogenous crop-residue, the nitrogen of which has come from the sub-soil, it is obvious that a like explanation would be applicable to the accumulation which takes place when arable land is laid down to grass.

Then, again, as to the supposition that the gains of nitrogen in argillaceous matters of very low initial nitrogen contents, which gains are attributed to the fixation of free nitrogen, serve to explain the gradual formation of vegetable soils, there cannot be any doubt that, so far as nitrogen is concerned, the natural fertility of most soils is due to the accumulation of ages of natural vegetation with little or no removal of it, by animals or otherwise. If the amounts of nitrogen even now brought into combination over a given area under the influence of electricity in equatorial regions, were not exceeded in the earlier periods of the history of our globe, that would be quite sufficient, with growth and with little or no removal through the ages which modern science teaches us to reckon upon, for the ascertained accumulations in natural prairie or forest lands; and it is these which have to a great extent furnished us with our meadows and pastures and arable soils. Frequently the natural forests have been on the more elevated, or the more undulating lands, and the soils they have formed are less rich than the prairie lands, for the most part found in the valleys or on the plains. Taking the vast areas of fertile, natural prairie on the American continent, for example, sometimes of several feet in depth, it may be estimated that, in such cases, each foot of depth will contain from 6,000 to 10,000 pounds or even more, of combined nitrogen per acre; and the probable time of these accumulations entirely obviates the necessity of calling in the aid of the free nitrogen of the atmosphere brought into combination either under the influence of the plants themselves or of micro-organisms within the soil.

COMPENSATION FOR SOIL EXHAUSTION.

Whether we consider, say Lawes and Gilbert, the facts of agriculture generally, or confine attention to special cases under known experimental conditions, the evidence does not favor the supposition that a balance is maintained by the restoration of nitrogen from the large store of it existing in the free state in the atmosphere. Further, our original soil-supplies of nitrogen are, as a rule, due to the accumulations by natural vegetation, with little or no removal, over long periods of time; or, as in the case of many deep subsoils, the nitrogen is largely due to vegetable and animal remains, intermixed with the mineral deposits. The agricultural production of the present age is, in fact, so far as its nitrogen is concerned, mainly dependent on previous accumulations; and as in the case of the use of coal for fuel there is not coincident and corresponding restoration, so in that of the use or waste of the combined nitrogen of the soil, there is not evidence of coincident and corresponding restoration of nitrogen from the free to the combined state.

In the case of agricultural production for sale without restoration by manure from external sources, a very important condition of the maintenance of the amount of nitrogen in the surface soil, or of the diminished exhaustion of it, is the growth of plants of various range and character of roots, and especially of leguminous crops. Such plants, by their crop-residue enrich the surface soil in nitrogen. It is, as a rule, those of the most powerful root-development that take up the most nitrogen from somewhere; and this fact points to a subsoil source. But independently of this, which obviously might be held to be only evidence of the necessity of obtaining water and mineral matters from below, in amount commensurate with the capability of acquiring nitrogen from the air, the experimental results at Rothamsted can leave little doubt that such plants obtain at any rate much of their nitrogen from the subsoil.

INHERENT FERTILITY OF SOILS.

Bearing in mind, however, the very large store of already existing combined nitrogen, especially in subsoils, it is important to consider in what way, or in what degree, this store may contribute to chlorophyllous vegetation. There is in the first place the question, whether the roots of some plants, and especially those of certain deep and powerfully rooting *Leguminoseæ*, whose root-sap is strongly acid, may either directly take up organic nitrogen from the soil and subsoil, or may attack and liberate it for further change, the nitrogen so becoming more available.

Again, so far as is known, the fungi generally, derive their nitrogen largely, if not exclusively from organic nitrogen. In the case of those of fairy rings for example, there can be no doubt that they take up from the soil organic nitrogen which is not available to the meadow plants, and that, on their decay, their nitrogen becomes available to the associated herbage. In the case of the fungus-mantle, observed by Prof. Frank on the roots of certain trees, it is to be supposed that the fungus takes up organic nitrogen, and so becomes the medium of the supply of the soil-nitrogen to the tree.

More pertinent still, is the action of the nitrifying organisms in rendering the organic nitrogen of the soil and subsoil available to the higher plants. It may well be supposed, therefore, that there may be other cases in which lower organisms bring the organic nitrogen of the soil and subsoil into a more available condition; while it seems not improbable that the growth and crop-residue of certain plants favor the development and action of special organisms.

The Cape Hyacinth (*Hyacinthus candicans*).—This is one of those flowers which appear to best advantage when used among other flowers. A dozen bulbs planted in the center of a circular bed of gladioluses of dark colors produces a striking effect. The tall stalks crowned with pendant bells of pure white contrast pleasingly with the brilliant color of the gladiolus.

ROCKY MOUNTAIN SHRUBS.

F. W. ANDERSON, MONTANA.

All who have visited England have been impressed by the garden-like appearance of most of the rural districts. Whether they are whirled along on the limited express, or drive leisurely down some country lane, the same pleasant charm takes hold of them. There are green fields enclosed by dark green hedges all aglow with roses, and fragrant with the odor of meadow-sweet. The shady lanes are lined with tall and ancient oaks or elms, whose spreading branches meet from either side, and form a continuous arch of living green.

In the Eastern States there are many localities possessing a similar appearance so refreshing to the Western man who is accustomed to broad plains over which the eye can sweep for miles without seeing even a green tree—nothing but grass and sky, with countless herds of horses and cattle grazing over the entire area. To such a man these spots of Eastern verdure have a charm peculiarly their own. More than one of the now most beautiful interior States once contained large tracts devoid of trees. Where are now rich corn fields bordered by Osage hedges and shady country roads, once

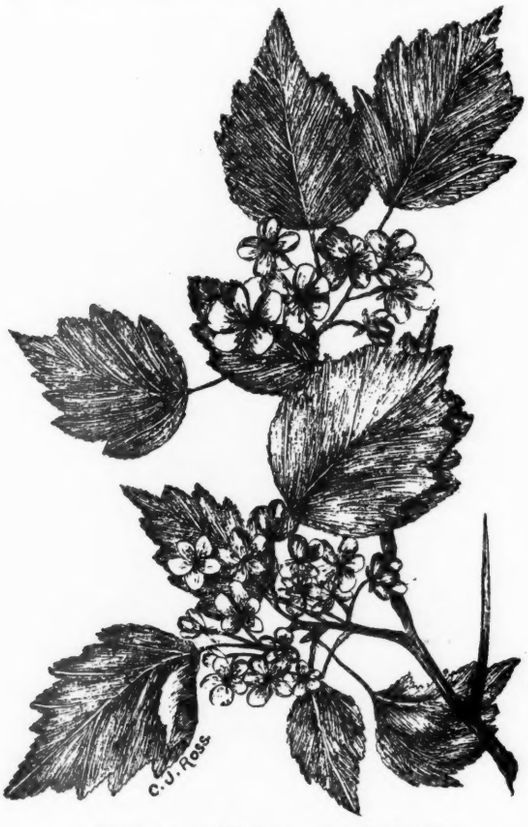


FIG. 1. THE MONTANA SCARLET THORN.

roamed the wolf and coyote, the badger had his hole and the rattlesnake basked in the noontide sun. The hands of an industrious, God-fearing people have made the fruitful and beautiful present out of the wild and barren past. Montana's plains are as devoid of trees as any of the Eastern States have been. The mountains are full of splendid timber and the rivers and brooks of the plains are also fringed with groves. We have plenty of indigenous species of trees that would grow if planted, and plenty of good shrubs suitable for hedge purposes. In England the most popular tree for hedges is the Hawthorn. In Montana, we have at least two species of hawthorn, one having long, sharp thorns and bearing scarlet berries, and the other having short, blunt thorns and black berries. In late summer, when their fruit is ripe, these small trees growing side by side, as they frequently do, are beautifully contrasted; the glossy black fruit clusters of the one handsomely setting off the bright scarlet clusters of the other. The black-fruited kind is scientifically called *Cratægus rivularis*, and is most common along brooks and rivers, where it grows into a small tree with a rather compact top. The other species is called *Cratægus coccinea*, on account of its scarlet fruit. This kind, of which a spray is shown in Fig. 1, is also common along streams, but it is equally abundant on high rocky slopes and steep hills; it will grow in dry as well as in moist situations; in rocky soil as well as in loamy. Its nature is such that by pruning with a hedge knife once a year—after the first year,—it would grow into a dense, thorny hedge that no horse or cow would go through. To make a good hedge the cuttings should be planted in a rather deep, narrow trench not less than six, nor more than nine, inches apart. In three years, with proper management, the hedge would be stock proof; it would be an excellent feature in the landscape; it would draw more moisture and exhale more; it would make a good wind-break for growing crops, and thus be an advantage from several important standpoints. These two hawthorns which growing together make a handsome picture, are well worth adding to the list of ornamental trees and shrubs. In spring, the large, fragrant white blossoms come out plentifully and are quite an interesting addition to the flowering shrubs of the park and garden. A shrub which might be profitably grown not only in Montana, but all over the country as well, is *Amelanchier alnifolia*, the Western service berry, or the Alder-leaved service berry. Favorably situated it attains a height of at least twelve feet, branching freely. In May the numerous delicate, white blossoms, scented somewhat like almond flowers, render it an attractive object. By the middle of June the berries ripen, hence another common name, viz: June berry. These berries are dark purple, covered with a waxy bloom as on plums, and grow in clusters. In the mountains one can find literally loads of the fruit as late even as the end of August, and the Indians then dry large quantities for winter use. The shrubs bear larger and better fruit, and more of it, when not over four feet high. They like a rich loamy soil with plenty of moisture, though I have seen them doing very well on stony hillsides. They can be grown from slips, but a better plan is to dig up strong, bushy clumps that are not too old. Divide the roots of these, trim the stocks pretty well back and plant in rows, not closer than six feet each way. The soil should be rich and well stirred, if you want heavy crops of fine fruit. The fruit always finds a ready market here. It is much used for pies, puddings, sauces and preserves. Being very sweet, it is desirable to add a little of some more acid fruit. The clarified juice boiled down makes a rich jelly of such a charming color as to fill every housekeeper's heart with pardonable pride. A little raspberry juice boiled with it makes this jelly as pleasant to the palate as it is beautiful to look upon. Fig. 2 shows a small sprig of this excellent shrub in blossom, and Fig. 3 represents a cluster of berries, both reduced in size.

FIG. 2. FLOWERING BRANCH OF WESTERN SERVICE BERRY.

FIG. 3. CLUSTER OF BERRIES.

Alaska Currants.—The dried currant-like fruit frequently referred to by travellers in Alaska as gathered by the Indians in immense quantities, is not a true currant, but the berries of the *Shepherdia argentea*, a large shrub known in our Northern States

and Territories as the Buffalo berry. A correspondent residing at Fort Wrangle, Alaska, writes us that this is about the only native edible fruit of the country, and the Indians appreciate it so highly that they gather and dry it for winter use, the berries not only serving as an agreeable acid sauce, but no doubt adding much to the health of the consumer. While this handsome and prolific shrub is a native of the colder regions of the Rocky Mountains from New Mexico northward to Alaska, it also thrives in the gardens of our Eastern cities and their suburbs, where it has been sparingly cultivated for the past half-century, and perhaps for a longer time.

LOSS IN CURING FODDER CORN.

JOSEPH HARRIS.

That is a startling statement which Profs. Henry and Woll make in regard to the results of their experiments in curing corn fodder. I had supposed that, when properly done, green grass and green corn fodder could be dried with little loss, except water. We know that rain and even heavy dew would wash out more or less sugar and other soluble matter from partially cured grass, and farmers aim to avoid this loss by curing the hay as rapidly as possible or by taking pains to cock it in such a way that the rain and dew can only reach a comparatively small amount of hay on the outside of the cocks. In curing corn fodder I have also been in the habit, after allowing it to wilt for twenty-four or forty-eight hours, of tying it in bundles and standing the bundles in compactly-made stooks tied at the top in such a way as to shed rain. Such a stook or shock of corn fodder will stand considerable rain without being wet in the inside. I supposed, therefore, that corn fodder could be cured with comparatively little loss.

But the experiments made by Profs. Henry and Woll at the Wisconsin Experiment Station seem to show that all of us are mistaken in this matter—that, in short, there is a serious and astonishing loss. Prof. Henry, as the results of his trials, says: "It seems but fair to say that the farmer who leaves his fodder in the field one month after it is cut and shocked loses in the neighborhood of twenty per cent, or one-fifth of the total dry matter it contained, by thus exposing it." Can this be possible? The amount of loss is ascertained in the following manner: . A sample of the green corn fodder is weighed, dried and afterwards kept in a water bath (or vessel surrounded with boiling water) until all the water it contains is driven off. The amount of water in the cured corn fodder is ascertained in the same way, the only difference being that one is dried rapidly under cover, while the other is dried slowly in the shock.

If one-fifth of the actual dry matter (not water) of the fodder is lost in the shock, what becomes of it? Is it burnt up or is it washed away, or does it fly off bodily, or has there been some mistake in the method of taking the samples for the determination of the dry matter? I think Profs. Henry and Woll will unite with us in hoping that the latter was the case. Prof. Henry says: "It appears, then, that something like twenty to twenty-five per cent of the dry matter of fodder is lost after cutting and before it is fed out, and that this loss cannot be reduced by any present methods of storing." This is a melancholy conclusion—one-fifth to one-quarter of all our corn fodder actually and totally lost and no remedy! Let us hope there has been a mistake!

A little over forty years ago, Prof. Way, chemist to the Royal Agricultural Society of England, determined the amount of dry matter in turnips. He found considerable less water in them than Lawes and Gilbert. Some startling deductions could have been drawn from the fact. But it was found that Lawes and Gilbert weighed their crops and took the samples in the field adjoining the laboratory, while Prof. Way had his turnips sent to London, and before they were weighed they had lost considerable water. This discovery showed where the increased amount of dry matter in the turnips came from! History is apt to repeat itself, and we cannot but hope that Profs. Henry and Woll will discover that the gain in dry matter in the samples cured in the laboratory, or to state it differently, the loss of dry matter by curing in the field can be explained in the same way.

The facts as reported in the Fifth Annual Report of the Experiment Station of Wisconsin are as follows: The corn fodder was cut August 18-22 and immediately drawn to the barn and weighed. It weighed 17,408 pounds.* It was then drawn back to the field and stuck up in stooks to dry. In these it remained a month. It was then drawn to the barn again and, I presume, weighed, though the weight is not given. The weight as fed out after standing in the barn all winter was 4,998 pounds. In other words, eight-and-three-fourths tons of green corn fodder gave two-and-one-half tons of cured corn fodder as fed out in the spring. But these figures of themselves do not show the loss of dry matter. They show the loss of water and of everything else that was lost, whatever it may be. The loss of actual dry matter during the month the fodder stood in the field is calculated from analysis. The analyses seem to show that the 17,408 pounds contained 5,048 pounds of actual dry matter, and after standing one month in the field, 4,112 pounds, showing a loss of 936 pounds, or eighteen-and-one-half per cent. The question to be determined is whether we have positive proof that this 936 pounds of dry fodder was actually lost while standing in the shocks in the field?

In the first place, we have to determine how much dry matter there was in the 17,408 pounds of green fodder when weighed at the barn. Samples for analysis were taken from similar fodder after it had been run through a cutting box, and the average amount of water found was 71 per cent. Were these samples weighed immediately on the barn floor as soon as taken, or were they taken some time afterward in the laboratory? During one of our hot, dry days in August, green corn fodder when crushed and cut up into half-inch lengths by a feed cutter, will lose water very rapidly. Seventeen thousand pounds of green corn fodder, crushed and cut up in this way, would lose a large quantity of water in a short time. This may be the correct explanation.

And if not, we must hope that after the green corn fodder was weighed, a little of it fell off the load on its way back to the field, or that the man on the wagon-rack left a bunch of it to hold up his ladder. Again, when drawing the dried corn fodder back to the barn in September, possibly a little of it fell off the wagon, or was blown away, or was not picked up very clean. Furthermore, it would seem from the record that the loss of 18½ per cent did not necessarily occur while the fodder was standing in stalks in the field. The figures given apparently refer to the amount of fodder fed out from day to day during the winter. If this is the case it is quite easy to see where the loss of 18½ per cent occurred.

On the whole, therefore, we have some grounds for hoping and believing that there is no real necessity for our losing such a large proportion of our fodder by curing it in the field.

*In the test, the weight is given as 17,908 pounds and in the accompanying table as 17,408 pounds. I presume the table gives the correct figures.

CHANGE OF PASTURE.

It is a too common practice for land devoted to the pasture to be given to the stock in a body, over which they have continuous and unrestricted range. That this is not good policy is apparent. The whole pasture surface is kept constantly fouled and tread down. No portion of it is allowed to freshen up during the grazing season. Actual test has proven that two five-acre pastures, fed alternately, are worth much more than one ten-acre field fed continuously. The grass roots have a much better chance in the former, especially in the dry time. They are not then constantly trampled, and the protecting growth above fed down. One-half the pasture is allowed an uninterrupted growth of several days while the other is being fed. This in turn will offer fresh feed while the first is getting a rest, and so, alternately through the growing season.

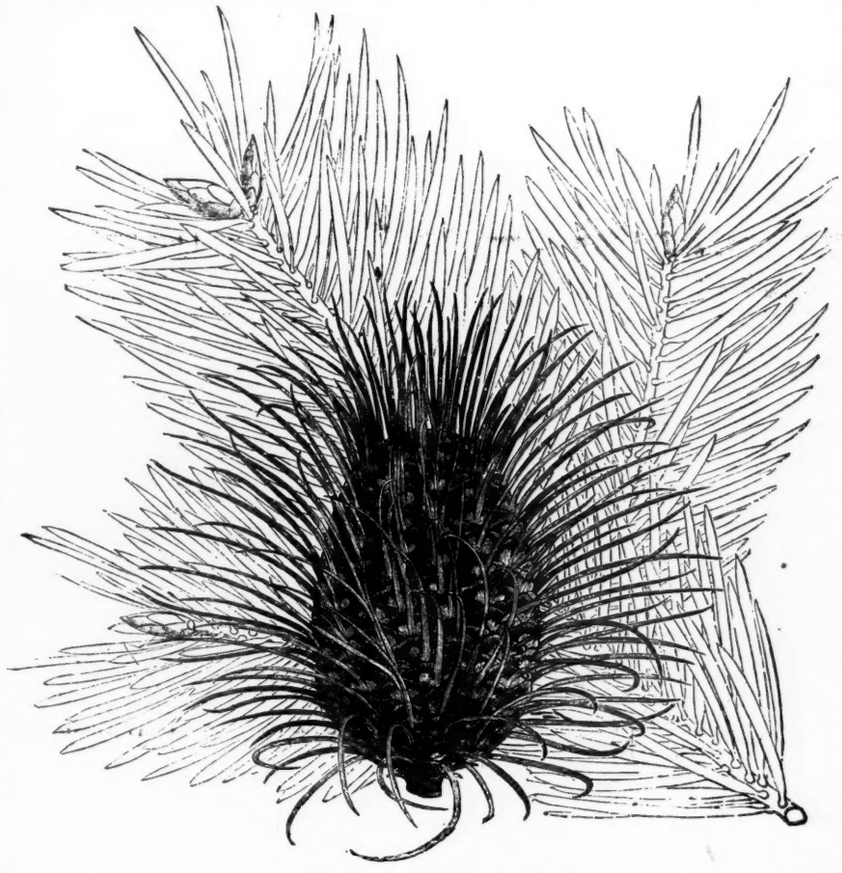
The expense of thus separating the pasture into parts is slight indeed compared with the benefits realized. It is supposed that the pasture is already surrounded with fence. All that is required to make the division is to run a fence across the pasture. This fence may usually be of a rather light, temporary character, as there is nothing on either side to tempt stock to make a breach, and no great damage to be done if they do. Movable panels may be staked in place, or three wires strung to form the division. The cost of this improvement in a ten-acre pasture would not be over eight dollars or ten dollars, while the gain in a single season will treble this amount.

Staking Dahlias. — Dahlias should always have stout stakes driven close to the main stalk of the plant to give the support needed in case of high winds. If these stakes are painted green they will not be noticeable, and if they are taken indoors in autumn, when the dahlia roots are taken up, they will last several years. They are much neater than anything that "happens to be at hand" when you get around to attend to this necessary work.

THE BRACTED SILVER FIR (*Abies bracteata*).

DR. GEORGE THURBER.

The longest of my botanical tramps began at the coast of the Gulf of Mexico and ended at San Diego on the Pacific. This, with its many detours and needful excursions to the north and south of the direct line, made the trip a long one as to miles, but occasional encampments in several localities so extended the time that its starting was in July, 1850, and it was February, 1852, that we first felt the welcome sea air, and heard the music of the surf. Though San Diego was our legitimate terminus, the travel-worn condition of the material of our expedition rendered an almost complete new outfit necessary with which to undertake the return journey. Tents and other camp furnishings, besides various army stores, could be procured more readily at San Francisco, and a journey by sea was taken to that, even then, wonderful city. Among the pleasant episodes of that visit to San Francisco was the meeting with that most enterprising of collectors, and most genial of men, William Lobb, the noted California collector for Messrs. James Veitch & Sons. At that period in the history of California, stories of the most wonderful discoveries were frequent. Among the marvellous tales sent to the papers of the Eastern States were those of the existence of whole mountains of soap, and of the discovery of groves of nutmeg trees loaded with their valuable and aromatic nuts. The story of the "nutmeg" tree had some foundation; there was a tree bearing a fruit shaped like a nutmeg, but beyond that all resemblance ceases. The tree proved to be a species of *Torreya*, a genus named some fifty years ago in honor of Dr. John Torrey. The first species so named is a native of Florida, and an account of a pilgrimage to the *Torreya* by the late Prof. Asa Gray, published in the AMERICAN AGRICULTURIST in July, 1875, will interest all botanists and lovers of trees. The Californian Torreya (*Torreya Californica*) is found in several localities in the Sierra Nevada. At the time we met Mr. Lobb he had just returned from an excursion to one of these "nutmeg groves" and from a tour in another direction to one of the localities of the Bracted Silver Fir, which he visited for the purpose of procuring seeds. Former explorers had not found mature seeds, but Mr. Lobb was eminently successful, and procured the seeds from which the many specimens of this fir now in England were raised. This, considered the most elegant and remarkable of all the firs, was first discovered in the Santa Lucia Mountains, one of the coast ranges of California, and is found at various places at an altitude of about six thousand feet, all the way to Oregon. The *Gardener's Chronicle* (England) published recently an engraving of the foliage and cone of this tree, which we reproduce herewith. The tree seen in perfection in its native latitude is one of great beauty in form, reaching one hundred and fifty feet in height, the trunk often nine feet in diameter and completely hidden by the abundant branches. The foliage is of a shining green above, and of a silvery hue below. The cones are most peculiar and unlike those of any other conifer. In most cones, the bracts, of which there is one to each scale, do not project far beyond the scale, but in this species, the bracts are prolonged about two inches into a leaf-like projection. The cones are about four inches long and two inches in diameter, and as they grow in large clusters, they appear of great beauty in their leafy surrounding. We have made inquiry of Prof. C. S. Sargent, of the Arnold Arboretum, and of others interested in trees, and cannot learn of any specimen of this species growing east of California. In England it succeeds admirably, a number of specimens having fruited.



FOLIAGE AND CONE OF THE BRACTED SILVER FIR.

DISADVANTAGES OF SMALL OR IRREGULAR FIELDS.

W. D. BOYNTON, WISCONSIN.

We frequently find, especially in the timber country, where the clearings were made a little at a time, and inclosed for immediate use, farms made up of odd, irregularly-shaped fields. Sanctioned by long usage, these little fields seem to have become permanent institutions on such farms, and continue year after year, without change, long after the necessity which created them has ceased to exist. So also, many of our old highways were laid out with regard to the ease of construction, and the natural advantages offered by the surface of the country, rather than on mathematical lines. To-day, while they form picturesque features of our landscapes, they mutilate our farms seriously by cutting across corners, and thus causing so much extra fencing. Now that homes have been established, and buildings erected along these highways, the necessity for their continuance is readily apparent. This necessity, however, does not exist in the division of the farm into fields. Lands cannot be well cultivated in small, irregularly-shaped fields, to say nothing of the cost of keeping up so many fences. I can point out many farms in Wisconsin where there are fully three times as many fences as are needed; and they cut the farms into fields of various sizes and shapes. Most of these are the old rail-worm fences, that occupy a strip of ground at least a rod wide, and these strips of land so occupied are worse than wasted, because they are nurseries for weeds, briers, bushes, and vermin of all sorts. When an enterprising farmer gets hold of one of these farms, the first thing he does is to tear out these fences, so that he can cultivate with economy, and save the cost of supporting them. One would hardly know the farm in a year or two later. He may destroy something of the picturesqueness of the landscape; but he will put that farm into workable condition and add at least one-fourth to its producing capacity.

Rye, Clover, Sheep: Rotation.—If a farm is running down and the owner getting poor, there is no rotation which will turn the tide in his favor more promptly than the one mentioned above. The land is plowed in August, and rye, at the rate of five pecks to the acre, is sown. In September we sow timothy seed, and in March sow a liberal supply of clover, which germinates very early and by August is in the height of its glory. Then the sheep are turned in and that plot of ground will not "run down" unless overstocked. When this sheep pasture is plowed up and planted to corn, a wonderful change will be noticed. Two crops of corn, one of oats, then back to rye, clover, and sheep again, completes the rotation.

THE HOUSEHOLD

Keeping Cut Flowers, Wild and Cultivated.

How to keep flowers after they have been cut, is a problem that often puzzles people in the city as well as the country. The florists usually have refrigerators in which to keep their flowers. But a cool ice box is not often to be had at the very time when it is most wanted. The first essential in keeping cut flowers is to prevent their moisture from evaporating. Even wild flowers, which are the most delicate and shortest lived after they are cut, can be kept for a week or ten days if evaporation from them can be entirely prevented. Fig. 1 shows one way in which this may be done. Take a clear glass bottle, the wider the neck, of course, the better. Put half a cup of water in it. Take the bunch of flowers, press them through the neck (they will bear gentle squeezing) and leave them so that the ends of the stems are just clear of the mouth. Then put in the cork and turn the bottle upside down, as shown. If the glass is clear, they will make a pretty table ornament.

FIG. 1. FLOWERS IN GLASS BOTTLE.

When gathering wild flowers take along with you a tin pail with a tight cover. Put less than half a cupful of water in it. Sprinkle the flowers as soon as they are gathered and pack them closely into the pail. Do not hold them in the hand a moment longer than necessary. Keep the cover on except when it is necessary to put in more plants or flowers. Garden flowers are much more hardy, and with care will keep many times as long as the wild ones.

Those who have glass shades can employ them to advantage, as shown in Fig. 2. A large flat plate which will just hold the shade is taken, and water put in it to the depth of half an inch. The vase with the flowers is set in the center, and the shade placed over all. The bottom of the shade dips in the water and makes a perfectly tight joint, sealing the flowers completely. A large tumbler will serve the same purpose when only one or two choice little flowers are to be kept. Here comes a word of caution. Every time the flowers are opened and exposed to the air something is taken away from their lives.

FIG. 2. FLOWERS UNDER GLASS SHADE.

Common glass fruit jars may be used for preserving bouquets. The flowers in this case are set in some small vase that will enter the mouth. The vase is then set in the cap of the jar, which has a little water put into it. Next the jar is inverted and screwed down upon the cap and set away, bottom up. The reason for doing this is to avoid the trouble of lowering the vase of flowers down into the jar and taking it out again.

A lamp chimney can be made into a flower holder that will serve every purpose of an expensive glass shade. Put a cork in the top. Rub the cork all over with beeswax and melt it in over the stove. This insures its being air-tight. If the sides or edges of the cork are waxed it will make a tighter joint. If a cork of suitable size cannot be had, tie a piece of muslin over the mouth of the chimney. Trim it up neatly and dip it in a saucer of melted beeswax so as to make it tight. And if beeswax is not at hand, tallow will do very well. Even a coat of paint or a dip into the paint pot would answer at a pinch. The idea is to make the top of the chimney as nearly air-tight as possible. Arrange the flowers in a cup or some vessel that will allow the bottom of the chimney to come down into the water. Then we shall have something that will look like Fig. 3.

There is still another kind of shade and lamp chimney combined that can be used in the same way and will cover a very large saucer or even a bouquet of flowers. This is the radiator that is made wide at the bottom and fits upon another glass of nearly the same shape as itself. The top piece, when of clear glass, can be used by stopping the top and setting it in a plate. If the top is of ground glass the bottom can be used in the same way. The smaller hole is closed and it is inverted over the flowers, which are placed in a saucer in the center of a plate. Fig. 4 shows this arrangement of the wide lamp shade. But the reader says, "My flowers will keep as long as I wish when they are on my own tables or mantels." "I want to send them away by mail or express, and then they fade at once." Now this is even easier than in the other case. The baking powder box is just the thing. Any tin can with a tight cover will serve as well. Give the flowers a slight sprinkling with water. Crowd them into the can, selecting one that is of about the right size. Put but little, if any, water in (though a piece of cloth as large as the hand folded and dampened may go in with them); put on the cover. Now take a strip of paper long enough to go twice around the can and paste it over the joint where the cover comes on the can. If you paste on a label be sure that it goes all the way around and laps upon itself. The reason for this is that paste does not stick well to the tin, but holds well on paper. Do not put much water in the can. A teaspoonful will answer if the can is tight and does not hold more than a pint. Packed as described we have sent flowers of the small or pale sheep laurel, *Kalmia glauca*, from Maine to Central New York and had them perfectly fresh, even when the journey occupied more than eight days. Do not try to send flowers by mail in pasteboard or wooden boxes, unless they are enclosed in paraffine paper or other water proof material. It is a waste of good postage stamps.

FIG. 3. FLOWERS IN LAMP-CHIMNEY.

Amusements.

O VICE SISSON.

A little means volumes when made to include the around-the-world list of subjects and methods for the physical pleasure of humanity. If I were allowed to prophesy, I would say that no one living ever dreamed, even, of the real and necessary use of the thousands of thousands of amusements of man. For your own pleasure stop and count up the different kinds of—I wish I could find another word which means the same, but I can't, so shall have to use it over and over—amusements among your acquaintance. Never despise amusements, and when you think some one or certain ones are not right, do not blame those who use them, but remember that people use injurious things when they can do no better. The person who goes without amusements is starving a part of his life, and the person who uses unhealthful amusements is poisoning his life because he either knows no better or has a morbid appetite. Frozen potatoes are unhealthy, but I have known families to eat them because they had to eat something and could get nothing else. A work girl in a village said when asked why she attended the public dances, "Why, I have to go somewhere, and they never notice me at the dull socials."

Who will overcome evil with good by studying healthful amusements for the use of all classes?

Enlarged Shade Hats for Out-Door Workers.

FRANCES H. PERRY.

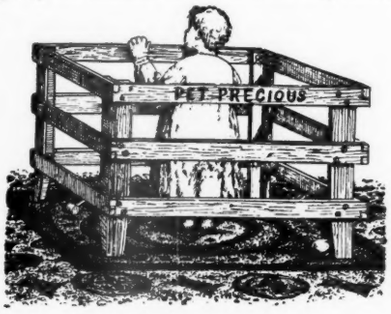
There seems to be nothing procurable just now that will furnish protection against the sun except what are termed garden shade hats, and one can hardly be comfortable wearing one of these in a hot day without a parasol also. They are very nice for some purposes, but for those who wish to spend long days in the fields they do not afford a very effective protection against tan and sunburn. Sunbonnets, so often resorted to by the uninitiated, though nice for the complexion if made large enough, are soon found to be a delusion as far as comfort is concerned, their close, flapping sides effectually shutting out sound and air. The arrangement here represented is the result of a sudden inspiration which came to a lady often called to spend a part of the hot summer days in the open field. Veils being a nuisance, parasols a hindrance and her out-of-door occupation a necessity, she happened to hit upon the device illustrated, which is simply a plaiting of paper tacked to the rim of a common garden hat. She tried the experiment for one day; it was so satisfactory that she has enlarged her hat in that way for several seasons and considers the question of shade settled, as she desires nothing better, lighter or more airy.

FIG. 4. KEEPING FLOWERS UNDER LAMP-SHADE.

Any hat with a rim that does not roll up will do to enlarge, but one that can be bent down at the sides is best; any kind of paper may be used except tissue. To make a four-inch plaiting, take a long strip of paper nine inches wide, fold it lengthwise in the middle and lay it in plaits about an inch wide and tack it to the under edge of the hat rim, with the doubled edge of the paper outward. An ecru or yellow straw with a plaiting of fine, firm wrapping paper very nearly the same color looks much better than one would suppose. Ties or a bridle may be pinned under the trimming at the sides, with which to draw the rim down if the wind blows; many prefer to use ties in any weather, but of course the rim is not brought down so closely as to touch the face or prevent a free circulation of air. These hats completely protect the head and body from the heat of the sun and are a boon to farmers' wives and daughters, many of whom keep one or two always in readiness for immediate use. One plaiting will often last through the season, but as it takes only a few moments to make the addition, it is worth doing if it is only for one day's use, as has been proved many times by summer visitors

SERVICEABLE SHADE-HATS.

who, after seeing one, invariably enlarge their hats for their berrying excursions and long rambles. A merry party of girls *en route* for the berry pasture, with bright young faces shaded by spreading paper rays of some becoming color, is a pretty sight, and they have the comfort of daring the sun all day and returning as fair as when they started,



BABY'S PEN.

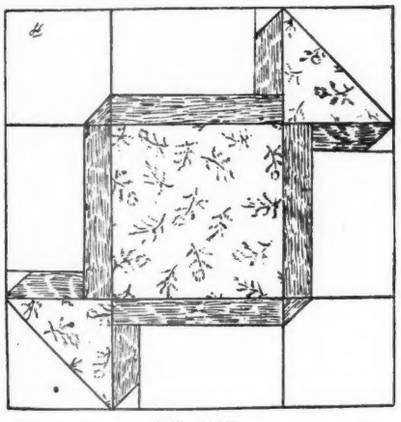
a consideration not to be under-rated at any time, especially in these days of white dresses, which, though universally becoming, always seem to intensify the color in a tanned face.

A Pen for the Baby.

Little Jack's mother is enjoying a happy freedom from anxious care while about her household duties, knowing that Jack is placed where he can injure nothing and nothing can injure him. A convenient safeguard like the one illustrated in the engraving and which can be folded and conveniently stored away when not in use, is made as follows: It is formed of four frames fastened together uprightly, each frame consisting of two posts and three rails. It requires strips of boards two inches wide cut into twenty pieces of three different lengths. The eight posts are twenty-one inches high; the six side rails are forty-eight inches long, and the six end rails are twenty-three inches long. Any other size may be used, it being necessary to cut the side rails two inches longer than twice the length of the end rails. In making the frames, place the top rail even with the tops of the posts and the other two rails below, five inches apart, clear. In putting the frames together, hinge both end frames to the back frame on the inside so that each can open only at an angle of ninety degrees, letting the side rails pass by the end rails. In fastening the front frame, fit the side and end rails so they cannot move up or down and hold in place with hooks. This frame work can be moved to any part of the room, and a soft rug spread underneath makes it a comfortable place for the baby, either in winter or summer.

The Vase.

This unique and seemingly difficult design for a patchwork square may be very easily cut out and pieced by making each one of the nine regular



THE VASE.

sections of which it is composed separately and seaming them together afterward. As here represented the center-piece in six inches square and is all of one material—rich brocaded velvet. The four side-pieces are each four by six inches when completed; and there are two pieces each of two kinds of material—plain silk and watered ribbon or silk, in every one of them. The corner-pieces are each four inches square; two of them—forming the top and bottom of the vase—are composed of equal triangles of the plain silk and material like the body or center square; the other two are chiefly of the plain silk, but small triangular pieces of the watered silk are fitted to one corner of each. It is well to make each section on a cambric or muslin lining if rich materials are used, but if prints or cambrics are chosen, it may not be necessary.

Squares pieced by this or similar designs are pretty to combine with crazy patchwork. Four finished squares, somewhat smaller than the one described, put together so that the vases all point from the center to the corners, make a pretty cover for a lounge or chair cushion.

Child's Apron.

In making the apron shown in Fig. 1, fold the material double for the front of the waist and cut one piece according to the number of inches given

FIG. 1. CHILD'S APRON.

in the diagram, Fig. 2. For the back cut two pieces, observing the number of inches marked in the diagram, Fig. 3. The size given is for a child from two to four years of age. Gather the upper part of the front from the middle to dots *a* on each side to a width of six inches, leaving a plain space from the armhole to dots *a* of 1¾ inches each side. Then gather the bottom of the waist from the middle to dot *b* to seven inches, leaving it plain four inches under the arm from the dot to the seam, and finish it with a two-inch-wide embroidered inserting. To

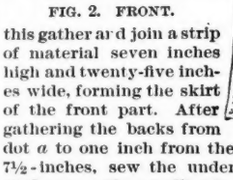


FIG. 2. FRONT.

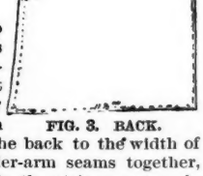


FIG. 3. BACK.

this gather and join a strip of material seven inches high and twenty-five inches wide, forming the skirt of the front part. After gathering the backs from dot *a* to one inch from the back to the width of 7½ inches, sew the under-arm seams together, at the same time puffing in the strings, as seen in Fig. 1, which have to be four inches wide and twenty-eight inches long. Then run four narrow tucks, for which the material has to be calculated separately, around the bottom of the apron, and finish it with an embroidered edging two inches wide; finish the neck and shoulders with the same edging, as seen in Fig. 1; cover the seams with a narrow fold stitched over them; bind the armholes with a strip of the material three-quarters of an inch wide, continuing it seven or eight inches long from the front to the back of the armhole, thus forming the shoulder. A ruffle of edging around the armhole finishes the sleeve, and two mother-of-pearl buttons with loops close the apron at the neck.

A Parlor Duster-Bag.

Every housekeeper knows the convenience of having a duster handy in each room in the house, so that a few spare minutes may be utilized in dusting furniture and ornaments, the time requisite to do which would be more severely felt if a journey had first to be made to the kitchen for a dust cloth. A pretty contrivance for keeping an article of this kind is made as follows: Take a piece of figured China silk that will fold into a perfect square of nearly or quite half a yard. Line it with cheese cloth to give it body, and in the top half cut a round hole large enough to admit of the

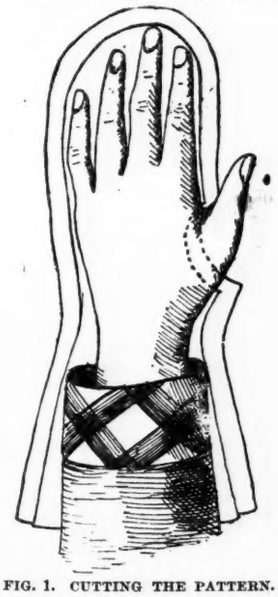


FIG. 1. CUTTING THE PATTERN.

hand passing through; face this and run in a drawing string of ribbon of the same or a contrasting color. Trim this opening with two folds of satin, one about an inch, the other an inch and a half wide, standing up like a collar; let these be of different colors. Feather-stitch the corners across so as to make a triangle five inches at the base and three on either side. When the bag is hung by the drawing string, these corners will set out. Place inside a half-yard of cheese cloth, hemmed, and feather-stitched with silk. This may be hung from the back of a chair or in a corner, and is an ornament which has the additional merit of being useful.

Home-Made Hand Protectors.

This summer two ladies, a farmer's wife and daughter, being called upon to assist more or less in the lighter part of the out-door work during haying and harvesting, besides having gardening to attend to and berries to pick, sought in vain for gloves or any suitable protection for the hands that would be strong enough to wear well, loose enough to allow freedom of motion, and thick enough to shield the skin from friction and the penetrating rays of the burning sun. They cheerfully performed their unwonted tasks, but, being ladies, strove at the same time to preserve the color and texture of their hands, and succeeded so well that when evenings and Sabbaths brought hours of rest, instead of the hardened brown hands they might have been obliged to endure, had they been careless of their appearance, their delicate ginghams and muslins were in no wise shamed by the stainless hands of their wearers.

Of course we know that in the thousands of

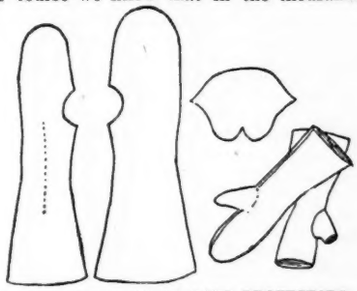


FIG. 2. SECTIONS OF HAND PROTECTORS.

country homes which this magazine reaches there are many farmers' wives and daughters who cannot possibly have fair white hands; of course we also know that a lady with brown toil-worn hands is often more truly a lady than some with "fairy

fingers, lily-white," but for neither of these reasons should the proper care of the hands be neglected by those who *can* care for them. It is unladylike, to say the least, for one to go about with brown, dingy, discolored hands when one has no excuse to offer except "Oh, I have time enough, but I can't bother."

The ladies spoken of, finding gloves close and cumbersome, and not long enough to fully protect the wrists, found, after several experiments, a way out of the difficulty that was so easy and satisfactory that they wish the following directions to be brought to the notice of every feminine reader of this publication, thinking many of them may be glad to try a pair of their home-made "hand protectors," or "shields" (they say "mittens" is too warm a name for hot weather).

Fig. 1 shows how to obtain a pattern; lay the hand easily down flat upon a piece of paper and mark an outline all around it from the finger-tips half way to the elbow, curving around the thumb, as shown—this is for the palm or inside of the shield; cut it out and by it cut another one of the same shape, making it an inch larger all round except at the top—this is for the back or outside piece; both sections are shown side by side in Fig. 2, which also shows the shape of the thumb pattern, which must correspond in size with the length of the thumb and the circular opening left for it in the shield.

When joining the outside to the palm it must be held slightly full all around the hand below the thumb; the thumb is folded lengthwise, sewed up, and stitched into its opening with the thumb seam and inner hand seam placed evenly together. A hem at the top is all the finish required. If one desires a closer wrist (but it is not necessary) the dotted line shows where an opening may be cut, hemmed or faced, and buttoned over. The wrists are to be drawn up over the sleeves and held in place by safety pins, which it is well to tack permanently to the hems. A finished shield is shown, also one with finger and thumb tips cut off to give the necessary liberty for berry picking and similar work.

If made of the legs of worn black, brown or blue stockings, close enough to fit neatly and buttoned at the wrists, they are quite pretty enough for amateur gardening, botanizing excursions, etc., but for actual hard labor those made of stout twilled drilling, seersucker, denim or the like, are much better, and they should be large enough to give free play to the fingers. Experiment with any old material until suited with the pattern; then, when about it, it is not much more work to make several pairs on the machine than it is to make one, and they are always serviceable. A pair kept exclusively for sweeping would not come amiss.

Dish-cloths vs. Dish-rags.

MRS. BUSYHAND.

"I guess you will find a dish-rag in some place about the sink," was the direction the daughter of the house gave to the neighbor who had come to help in the emergency. What she found was a black, damp rag, with the peculiar odor of many stale dish-waters clinging about it.

Fever had attacked the different members of this family, and the neighbor wondered if here were not the clue to its origin, as she put that dish-rag into the stove and supplied its place with a dish-cloth.

One of the most difficult things to teach an ordinary servant girl is to take proper care of the dish-cloths. After using they should rinse them thoroughly in clean water, and perfectly dry them, in the sun in summer and by the stove in winter.

The ideal dish-cloth of the model housewife is clean, soft, white and medium-sized. Worn table-linen is excellent to make into dish-cloths. Take the worn out napkins, or the most worn parts from an old table-cloth; ten inches square is a good size. Put two of these squares together and stitch across three or four times on the machine. Then turn and stitch the same number of times across the rows already stitched. The whole is now quilted firmly together and with proper care will last a long time.

As the various parcels come into the house, take the cotton string with which they are tied, knot together and wind into a ball. It only requires a moment's work, and in a short time a large ball of strong cotton cord will result. With this cord, using large wooden knitting needles, cast on stitches enough to make a strip twelve inches long when pulled out; knit back and forth in garter stitch until square. Cast off loosely, and you will have a very strong, serviceable dish-cloth.

Two dish-cloths ought always to be provided; one for the dishes and another for the pans and kettles. For these latter a wire dish-cloth is very handy. This can be purchased for a few cents at any house-furnishing store.

A vine to shade the porch, and the next year's supply of dish-cloths, may be grown at the same time by planting a few seeds of luffa or dish-rag gourd. It is quite common in the South. The vine with its dark, silvery green leaves is quite pretty. The fruit is about two feet long, and it is the tough, elastic, fibrous lining that is used for dish-cloths.

Midsummer Fashions.

As the heat increases, comfort becomes a consideration, and therefore, the blouse waist is in the ascendant, for there is nothing so easy or better fitted for all outdoor sports. Stylish young girls especially affect these simple sailor waists and straight, full skirts of serge or flannel, and wear with them a jaunty sailor hat, plainly trimmed. For afternoon and evening wear, however, the blouse is made of soft Surah or China silk, has most elaborately tucked, shirred or smocked yoke and sleeves, and is both pretty and dressy with white or black skirts.

A knitted blouse waist has also recently been brought out by an enterprising firm, which will be very comfortable on cool summer days and may even in time supersede the ever popular Jersey.

Ginghams, satines, and other cotton fabrics are made with French waists and nearly straight skirts. This French bodice shows no darts, but is gathered both front and back, at the waist and neck, over a fitted lining. It may be round, turned beneath the skirts and worn with a belt or sash, or left outside and pointed at the back and front. The skirt is shirred at the top of the back, but the front is laid in plaits or else slightly draped on the hips. An effective trimming for these plain frocks is collar and cuffs of black or dark colored velvet, and three large velvet-covered buttons set each side of the gathers at the waist-line, in front.

Old-fashioned, figured lawns and dotted muslins are once more in vogue and are made up in a quaint, antique style, with a long overskirt, nearly concealing an underskirt, which has a foot-trimming of a double ruffle, drawn on a cord through the middle. The top of the overskirt is also shirred on cords, while the belted waist has a corded yoke, and there are cords in points, at the tops of the sleeves.

The Directoire style holds its own for walking dresses, and the long side flaps are seen on many wool and silk gowns as well as the short, flaring *revers*, known as "*Incroyable*." For thin materials, however, the French waist, without darts, is more desirable. It is slightly elongated, being neither a round waist nor a basque, but something between the two. It extends just below the waist-line, and is pointed or rounded, while the fullness at the shoulders is flattened in small plaits. Surah or *moire* sashes are graceful additions to all costumes that have a gathered or surplice bodice.

Full fancy sleeves are many and various, although the coat sleeve is still preferred by many. Puffs, shirrings, standing ruffles, and loose folds caught in place are all used to make thin arms look full or to raise sloping shoulders; but the moderately large mutton-leg sleeve is generally the most becoming. This is cut all in one piece and has but a single seam at the inside of the arm, is very full above the elbow and very slender below, often buttoning at the wrist. A loose coat sleeve that has but one seam is also very nice for sheer fabrics, as lace, net, or thin muslins, and all such sleeves as well as bodices, must now be lined with thin silk or lawn, as this summer it is considered bad form to show even the arms through the transparent stuff.

Silk petticoats that shed the dust are in high favor, and the skirt of an old silk dress may often be utilized in this way. It should be made with a flounce around the foot and several ruffles up the back breadth, to the belt. Other colored underskirts come of gray mohair, of striped seersucker, and of cotton cheviots. The last two launder like white stuffs.

The Directoire ruffling, which is a three-inch knife-plaiting of muslin, lace, or soft silk, is largely used as turned back cuffs, and for the Toby frills about the neck,—which, however, are not generally becoming,—and particularly for edging the diagonal or straight front of a plain corsage. These ruffles often take the place of a vest, and are set in with the whole width showing at the neck and then narrowing toward the waist, where it disappears.

Sailor hats are again popular with young women for country wear, and to relieve their severity, they are often trimmed somewhat oddly, with loops and wings placed on the back and extending far toward the front, or else the crown is covered with a wide sash ribbon, arranged to lie flat in front, but gathered in high pointed ends at the rear. Colored straws, in this shape are particularly stylish when trimmed with black. The back of the brim is then turned up and caught to the crown by bows of watered ribbon, while a twist of the same encircles the hat. An inch-wide band of black velvet faces the brim, but does not entirely cover it.

The Empire pokes make excellent shade hats and are usually of Milan braid, decorated with a profusion of field flowers, as daisies, buttercups, or poppies. A facing of green velvet is a becoming addition for some faces, as green is now used in combination with all colors, on black, white and gray straws.

Black lace hats, or those of lace-like straw, are the dressy hats of the season. These also show a profuse trimming of flowers and foliage; while the large ones sometimes have a long, lace scarf attached to the close cut-off back, which can be drawn across the face, or else wound about the neck and tucked in the front of the dress.

Parasols have extremely long, rustic handles. The prettiest have pagoda-shaped tops, while the most stylish are striped, watered, or figured, and come in many designs to match costumes.

Shoes of tan, or drab, undressed leather, are extensively used for serviceable wear, but they never look as well as black. The most dressy low shoes have patent leather vamps, while walking boots are often tipped with the same glossy material. The easiest, coolest shoe, however, is the thin, French kid, made in the sensible style now fashionable, with wide common-sense toes and broad, low heels.

General Reading.

MRS. L. E. LYMAN.

When John is taken from the harvest field in the Fall and sent to the Academy to take a turn at his books and begin to be a scholar, the change is to him greater or less according to the amount of general reading that he has already done. If at home he has been accustomed to hear only about soils and fertilizers, and crops, and stock, and market prices, he will find himself at a disadvantage in the chemistry class, or the recitation in history, or the exercises in elocution and composition, where all the nomenclature is new and strange to him, all the characters hitherto unknown, and the attitudes of mind he is called to place himself in are entirely unaccustomed and foreign.

This state of things will not be materially helped by a mere technical drill, however good, in the district school, in "Reading, Writing and Arithmetic." The total amount of benefit he derives from his term at the Academy will be in the direct ratio of the amount of general knowledge he carried with him when he went there. If by reading History, Biography, Natural Science and Literature he has acquired elementary knowledge in these various branches, he will be able to enter at once, and with appreciation, upon his studies at school. But in so far as every branch he studies is comparatively unknown to him, his progress will be slow and unsatisfactory. The pupil who has never seen until he came to school a globe, or a microscope, or a spy glass, will find problems in geography, in optics, in astronomy, vastly harder than will the pupil who has always been familiar with these devices.

Many parents accuse really excellent schools and teachers of superficiality because they do not make scholars of those whose only book knowledge is acquired at school. Such parents really accuse only themselves. The child that goes out from a home where intelligence by all its members is diligently sought and cultivated goes prepared to reap whatever educational advantage the school he attends affords. The soil of his mind has been broken up, fertilized and made ready to receive the words of truth and wisdom the apt teacher will know how to plant in it.

Let there be books and magazines lying around

in easy reach of the children. Let them be suited to the capacities of the children, and such as will attract and interest them. Let them have time to read, and be encouraged to read and to talk about what they read. Thus will they come to the practical knowledge of how to use books in such a way as to gain from them the largest practical benefit, and to develop their powers of thought and enjoyment in intellectual growth and acquisition.

How to Interest Little Children.

MARGARET RYDER.

Happy, busy, contented little children are not apt to get into mischief or to learn evil ways. It is almost an axiom, that a happy child is a good child. Children are naturally active and busy, and it is a wise plan for a mother or elder sister to study how to meet the often preferred request, "What can I do now?" sure to be made not only once but many times during the day, especially when cold storms in winter or rainy days in summer keep the little ones indoors. Of course every little girl should possess a family of dolls, part of whom, at least, should have clothes which can be put on and off at pleasure. Little boys will enjoy playing with dolls, too, if not laughed at. As they are naturally so noisy, any of these quiet plays should be encouraged.

Children will amuse themselves for hours with very simple things. Kindlings cut into straight even length will affords entertainment for a long time. They will build lengths of rail fence, corn-cribs and cabins; or they can be sold to mamma for wood, unloaded and made into neat piles. A quantity of glass beads of many colors and shapes is a good investment, for they will keep little fingers busy for a long time arranging and re-arranging them. Buttons will answer the same purpose; the more odd ones the better. The buttons can be threaded on a strong card. A box of tacks, a small hammer and a smooth board possess more attraction for an ordinary child than the most expensive toys. Their possibilities are unlimited. Various figures can be drawn on the board with a pencil, and the child will delight to drive the tacks along the lines. One little fellow learned his letters in this way and to spell his name. Many children will enjoy a box of the cheap water colors. Very pretty pictures for them to paint can be cut from the advertising pages of magazines or newspapers. Paper cutting is another favorite employment of little children. A pair of blunt-pointed scissors and a bright showbill or two have helped many a rainy afternoon to pass quickly.

Any child, large or small, will enjoy playing with sand. A bucketful of clean, dry sand will insure peace and quiet on many a stormy day. A piece of oilcloth or a large paper should be spread down and the bucket of sand set on it. A few bottles of different sizes, a tin cup, a pan and a spoon or two should form part of the outfit. If a funnel, even if only made of stiff paper, and a bag or two are added, their possessors' contentment will be complete.

Children especially delight in anything that can be worked into forms as their imagination may suggest. Clay, such as is used for molding in some primary schools, is very nice, but if this is not available, a lump of putty is a good substitute. Tiny pieces can be taken off, rolled and patted into little loaves of bread, miniature pies and cakes. Different kinds of fruits are easily molded. If to the putty a box of wooden toothpicks is added, it is surprising how numerous are the objects that a child will fashion. We have heard of long lines of picket fence, made by sticking the toothpicks into a row of putty; chairs fashioned by joining the toothpicks with balls of putty, and various other articles made in the same manner. If the putty, when not in use, is placed in water, it will keep soft a long time.

Empty spools are superior to most blocks, but there must be quantities of them. Two or three hundred will not prove too many for the ambitious young builders. The collection will soon include all sizes and kinds, from the large sizes that have held linen thread to the small spools that twist comes on. Buildings that admit of towers and steeples are favorites. Numerous torchlight processions have been formed, each spool bearing a banner, thrust through the hole in the head. The banners were pieces of colored paper mounted on toothpicks. Innumerable droves of cattle, horses and sheep can be made of spools, the different colors and sizes adding greatly to the interest. If some of the articles mentioned are kept as mamma's property and only lent to the children, they acquire a peculiar attraction.

Muscular Development of Girls.

DR. H. REYNOLDS, MAINE.

The need of good muscular development for girls has been strangely overlooked. The healthy girls are the ones who have strong limbs, vigorous bodies and good lungs. The girls who have been reared in the country, where they were required to labor as they were able, from youth up, are the most perfect specimens of health generally, although not all the country girls are healthy; on the contrary, many of them are puny, sickly-looking beings. Some of the city girls that have been reared with special care to secure muscular development are strong and healthy. The muscular development of the girls is not nearly as good as that of the boys; neither is their health as good. As a matter of fact, it will be found that the degree of health, as a rule, will correspond to the degree of muscular development. Not that none who are well developed physically are sick, but that there is far less ill-health among those who have brought their muscular system to a full development.

A great deal of attention has been given to mental development, and a large portion of the time of nearly all our youth of both sexes is given to mental training, while the physical training to a large extent is unprovided for and allowed to take care of itself. The boys are so full of exuberant life and activity that they are pretty sure to take a fair amount of exercise in the various active sports in which they indulge, and in the labor they are required to perform. The girls, on the other hand, although quite active in out-door sports up to the age of ten to fourteen, after that age begin to feel the restraints of society and refrain from indulging in their former out-door activities, and not being required to perform labor sufficient to call into full and repeated activity their various muscles, soon begin to show the lack of muscular exercise and development. Very few of our girls are required to engage regularly, daily, from youth up, in work that calls into full exercise their muscular power. Work, and hard work, proportioned to the strength, practiced daily during the period of growth and development, is what develops and strengthens the muscles. Our grandmothers worked, and worked hard, from youth up, and were a rugged, healthy race. When the clothing for the whole family had to be woven in hand looms, of yarn spun from wool on the old spinning wheel, there was much labor required in the household, and every girl had to do her part daily from the time she was old enough to do anything. The muscles were daily used, and thus grew strong and increased in size, and as the muscles became strong and firm, their health became vigorous. Our grandmothers did not attend school nine months in the year and take the other three months in vacations. They performed hard work the year round, attending school about three months out of the year, but rising early all the time, so as to work before and after school hours. Is it not possible that we moderns are overdoing this mental training just a bit and neglecting the quite as important muscular training? Wouldn't a girl with a fine school education, who had a good, vigorous, muscular development and perfect health to give vigor to her powers of mind and heart, be as desirable a companion for a sensible man as one who had been through the boarding-schools, seminaries and colleges, but who had too feeble a muscular development to endure much exertion, and whose nerves were so overwrought that the slamming of a door would almost send her into hysterics? Most of our girls are kept in school the larger part of the time from the age of five to that of sixteen or twenty. Going to school is about all that is required of them. They are not required to do much work at home, and what they do is mostly of a light nature, requiring the exerting of only a slight amount of strength. That gives them no chance to develop their muscles. Very few girls are required to do hard work like washing and scrubbing. Their mothers or hired help do that. Yet girls need to do more *hard work* every day, according to their strength. Some mothers seem to take pride in saying that their grown-up daughters have never done a washing nor washed a floor, they always having done that work themselves. Those girls, having never done such work, haven't the strong muscles to do such work, and have passed the age most favorable to develop strong muscles for it. Those girls, many, and nine times out of ten, have their own washing and scrubbing to do, but haven't the strong muscles needed to do it. The consequence is that they break down in health, a part becoming invalids, dragging out a miserable existence, and a part of them die in a few years. Now wouldn't it have been a kindness to them if their mothers had accustomed them to do hard work like washing and scrubbing from their youth up, and thus developed strong muscles and vigorous health, so that they could do such work without injury when they came to be obliged to do it?

Let us have less sentimentality and more practical common sense in the education and training of our girls. Let them improve their opportunities for the development of their minds as they will,

CITY BOY: "*I smell honey.*"
FARMER: "*You will smell something warmer than honey if you don't get out of there pretty quick.*"

but do not neglect the training of their muscles in daily, hard work. Give them work, and require its daily performance. Calling forth the full exercise of their muscular powers, if not carried to the extreme of over-exertion, only makes them the stronger for the next trial of strength. There is only one way of securing strong muscles, and that is to use them. The use of the muscles stimulates circulation of the blood, strengthens the nerves and invigorates the health. The weak, nervous persons are not those with good muscular development. Soft, flabby muscles are the accompaniments of the weak, shaky, and hysterical nerves. Nervousness will diminish in proportion as a more vigorous muscular development is brought out by judicious early training.

Muscular development not only conduces to healthfulness, but also to beauty of form. A good muscular development is essential to secure the well-rounded outline that renders the human form most beautiful. It is lack of muscular growth that gives angularity to the form and ungainliness to the movements. The young lady with a perfect muscular development is the one with an attractive and agreeable form, and gracefulness in every movement. If a girl cannot have both muscular and mental development, then give her the more important, the muscular development. Good common sense will help the lack of mental training.

For Women Who Shop.

Not that women who read the AMERICAN AGRICULTURIST ever make a business of shopping, but because even very good women who have no weakness for this frivolous employment are sometimes obliged to spend a day, or part of one, in the performance of what is often an arduous and unsatisfactory duty, do we give a few rules which may be found of help:

The woman who goes "shopping" for a thing she does not want or intend to buy, is guilty of a cruelty to the clerks, whose duties would be less wearisome if they were approached only by those who were really in search of a needed article. Even those who honestly intend to become purchasers might make the matter easier for themselves and those who wait on them if they would but give a little thought to the matter before setting out. We have seen a woman dawdle for half an hour over some samples of neck ruching before making up her mind to purchase a yard, the tired clerk meanwhile keeping herself on the alert to serve half a dozen or more of customers at the same time.

Make up your mind before going out just what you want to purchase—how many yards and of what quality and price, and then don't be tempted by any of the so-called "bargains," which generally turn out very bad bargains indeed by inducing you to buy what you do not want just because it is cheap. Make a list of what you want and keep this list always before your eyes. Make it out in a methodical way, too. Don't write "saucepan, spool of thread, shoes, needles," etc. Write all the articles to be found at a certain store or department together, and as far as possible arrange your line of march with a view to economy of steps.

After you have once bought a cloak, or bonnet, or a piece of dress goods, don't look at anything more of the kind to find out whether or not you have paid too much. If you have, you had better not know it, for your own peace of mind. If you have a given amount to spend, get all the most important articles first, and the trifles with what is left. Herein lies the secret that enables one woman to dress well on a hundred dollars a year, while another is always either dowdy or shabby. One starts out with twenty-five dollars for her spring outfit. It must buy dress, cloak, hat, shoes and gloves. The sum is small, but it must be made to cover necessaries. She buys the dress first, and cutting her coat according to her cloth, does not pay twenty dollars for it, either. She reflects, "If I get enough of the material, I can make a jacket of the same, while a bit of velvet or ribbon with a flower, if these match or contrast prettily with my dress, will make a bonnet, the frame of which will be covered with the dress goods. So much for linings, so much for shoes, so much for gloves, etc. I cannot pay more than such or such a sum per yard." And so she calculates, while her sister with less financial ability has her eye attracted by a showy bonnet, pays ten dollars for it, gets a pair of high-priced shoes and then finds out that she is obliged to wear her old dress, which by contrast with her showy bonnet looks doubly shabby.

Lastly, keep your mind or your eye or your hand, or all three, on your purse, satchel and parasol. Don't lay one here and another there and then disturb the whole store by your outeries that they are lost. If you are absent-minded, and apt to do this, keep your purse in your satchel, which you can fasten to your arm by an elastic that will enable you to open it without easily losing it, and have some sort of an attachment by which your parasol or fan may be fastened to your belt.

Give the Baby a Drink.

ALICE MONTCLAIR.

The other night I was on a late train going out of New York, and in front of me sat a lady with her nurse and child. The latter was a remarkably pretty and healthy looking child of about fourteen months. Soon after the train started the child began to show signs of uneasiness, and soon, in spite of all the efforts of mother and nurse to quiet it, it began a series of twistings and contortions that would have done credit to a Japanese juggler, accompanying them by shrieks that testified to the strength of its lungs. There is an inborn horror of a crying baby implanted in every human breast, and the passengers soon wearied of this amateur and unsolicited musical performance. Nurse dandled and trotted, and held Baby to the car windows and doors, but Nature as seen from a rapidly moving car at night did not seem to have a quieting effect. A hectic flush rose to the mother's cheeks, when a quiet, sensible-looking, motherly woman arose from the other end of the car, brought a cup of water, and said, "Perhaps the baby wants a drink." It was just what it did want, and in five minutes it fell asleep in the nurse's arms, much to the relief of the other occupants of the car.

Many a baby is drugged with paregoric and soothing syrups when all that it needs, or wants, is a drop of water. It is always a safe thing to try a child with a teaspoonful of water when it is restless or evinces a desire to nurse frequently. A child who cannot ask for it often suffers torments for a drop of water. Especially in hot weather is this true. I have heard many a mother say that she had never thought of giving her baby a drink, and yet, from the very nature of a baby's food, it is more apt to require water than we are. Milk induces thirst, as anyone who has tried a milk diet knows.

Brazilian Lamp.

This lamp must not only be seen to be appreciated—it must also be smelled. It consists of a shallow, iron saucer with sides sloping inwards, save at the point where the edge is bent outward to form a lip or spout. Over it is fastened in half-hoop shape a flat piece of iron, like the handle of a pail, by which it may be hung from an iron spike driven into an adobe wall. The wick is a coil of coarse, homespun or raw cotton, the end of which is lighted, or hangs over the spout. By the light it gives one can usually manage to see where it hangs on the wall, and perhaps even to find the location of one's bed. When burning it smokes unceasingly, and worse than all, whether burning or not its odor is incessant, for the oil which feeds the flame is thick, black, and rancid oil as that of the Castor-bean must be before it has been through any refining process.

Curtain Lecture Topics.

Consult with your wife.

Better use, on a rainy day, mind and pen than tongue and jack-knife.

"All work makes Jack a dull boy," and no work makes Bill a very mean one.

Every man ought to be heartily ashamed of a gall on the shoulder of the animal he drives.

A lie is the only thing that can be made out of nothing: the milk cannot contain more than is in the feed and drink.

When the wife and children attend to the poultry, it isn't fair to exchange eggs for tobacco and machine oil.

If the money expended for tobacco and whisky were judiciously applied to the beautifying of our homes, what a lovely land would ours be!

Household Recipes.

Stewed Potatoes.—The French call this way of cooking potatoes "a la bonne bouche." It is a very nice way to cook the small new potatoes, which are sometimes quite cheap, when larger ones are too high-priced to purchase. Scrape them; this may be done quickly by putting them in a pail with cold water, taking half a brick and rubbing them vigorously with a sort of twist of the wrist, then finish with a knife and drop into clean, cold water. Boil, and let them get cold. Place a quart of them in a stewpan with three ounces of butter and a pinch of mixed sweet herbs; season with salt and pepper and shake for five minutes over the fire; sprinkle with minced parsley, squeeze a few drops of lemon juice over them, and send to the table.

Pigs' Feet.—These are nutritious, and if you don't buy them at a restaurant, where they somehow seem to retain the flavor of the farm yard, they are appetizing and delicate. Let the cleansing process be a thorough one, first scraping and washing, then soaking in cold water for a few hours, and washing and scrubbing again. Tie each one in a separate piece of thin old muslin; cover with boiling water, add salt, and simmer until tender,—about four hours. If you want them pickled, pour hot vinegar over them, adding salt, pepper and whole allspice. They are also nice if set aside until cold, split in two, dipped in a thin flour paste, rolled in crumbs and fried in hot dripping; garnish with parsley and slices of lemon. They can be broiled, after which cover with a sauce made of a tablespoonful each of butter and parsley, seasoning with salt, pepper and a few drops of lemon juice. They may also be dipped in a batter and fried.

Salt Mackerel.—"Nothing new about that," says some reader of the AMERICAN AGRICULTURIST, but if you have never eaten it cooked just as follows you will soon see that there is something "new" about it. Choose a large, fat, white mackerel weighing from a pound and a quarter to a pound and a half; soak it over night in a large pan of cold water, laying it skin side down. The next morning put it over the fire in cold water and let it come to a boil. Taste to see if it is too salt; if it is, change the water; if not, simmer until with a fork you can raise the bone. Drain off the water; lay the fish on a hot dish; lift off the bone and season with two tablespoonfuls of cream made hot, bits of butter, pepper and minced parsley. With this serve stewed potatoes. Slice cold boiled potatoes in thin, even rounds; season each layer with salt, pepper and bits of butter as you drop them into a wide saucepan. Cover with cold milk; stew fifteen minutes, and thicken with a teaspoonful of corn starch wet with cold milk. If it is baking morning, mold small flat muffins from the light bread dough, and let them raise for three-quarters of an hour; fry on a griddle on top of the stove, using a very little hot fat. When done tear apart with the fingers and drop bits of butter inside.

Beef with Macaroni.—This is an economical and excellent dinner. Buy a flank steak, costing according to the market from fifteen to twenty-five cents. With a sharp knife denude it of the bits of fat, and then spread it with a force meat made from two ounces of salt pork minced fine and fried, crumbled stale bread, a minced onion fried with the pork, and a seasoning of salt, pepper and powdered herbs. You will need only a cupful of the dressing, and the onion should be a very small one. Lay two or three thin slices of fat salt pork over the dressing, and then roll up the steak, tying or skewering it firmly. Put a little dripping in the bottom of a pot, and when hot lay in the meat and brown all around; then set it back on the range and let it cook very slowly until perfectly tender, adding little if any water, but letting it simmer in its own juices. Toward the last add a cupful of stewed and thickened tomatoes. Cook in another vessel half an hour before the meat is done, some macaroni of the broad ribbon variety; drain it; put a layer of this on a hot platter, sprinkle it with grated cheese; over this a ladle full of gravy from the pot, and so continue until the macaroni and gravy are all used. Lay the meat on top, and carve down through the middle in thin slices. What is left is nice sliced cold for tea, or made into a mince for breakfast with corn dodgers.

Three Fresh Air Children

UNCLE GEORGE.

Carl was one of the "Fresh Air children." They are called so probably because they get very little fresh air, save for a few weeks in summer. Carl's home was on the upper floor of a tall brick building on Rivington street, New York. There was a beer saloon on the first floor, a tailor shop on the second, and all the rooms above that were filled with tenants. In her one dingy little room and dark bedroom, Carl's widowed mother lived with him and his two little sisters, Bertha and Lena. She toiled at her sewing machine all day and often late into the night. During the long sultry summer days the air in the streets quivered with heat, and through the nights the close rooms were like ovens. Carl and his sisters, like thousands of other city children, had no place to play but the dark, narrow halls and stairways, or the blistering sidewalks. At length kind hearts found out the swarms of suffering children in the crowded houses. Some gave money to pay their fare on the railroads, others invited them to their country homes for visits of two weeks each; and still others went along to care for them on their journey to the country. So one summer morning, Carl found himself with Bertha and Lena, and hundreds of other boys and girls, on a railroad train whirling away from the scorching city, past green fields, sparkling waters and dark green forests. At noon, cups of bread and milk were carried through the trains and all the children were fed. Just at sundown, the train stopped at a small country station near which several farmers' wagons were waiting for some of the "Fresh Air children." The young man who had the children in his charge soon appeared, with a kindly-faced, gray-haired farmer to whom he led Carl and his sisters, saying, "Mr. Taylor, here are your little guests." "You are right welcome," said the old farmer, smiling pleasantly upon the children, whom he led to his wagon, and lifted them in. The twilight drive from the station to the farm—about two miles away—was a new and wonderful experience to the little ones, who had never before had a ride in anything but a street car. When they arrived at the farm Mrs. Taylor, a sweet-faced, motherly old lady, was waiting for them at the gate. She handed each one from the wagon with a kiss and led them into the house, while the old farmer drove off to the barn and stabled the horses for the night.

The children washed the dust of travel from their hands and faces and gathered around the table to such a supper as they had never seen before. Sweet, home-made bread, milk, fragrant butter and ripe berries fresh from the garden. When all were done, Mr. Taylor, who had come in, meantime, took a Bible from the shelf, read a chapter, and when all had kneeled down, made a short prayer. The children were soon snug in their beds, and went to sleep with no roaring streets, drunken shouts, nor rattling sewing machines to disturb them.

The next morning, Carl awoke with the first gleam of sunshine, dressed himself and ran down stairs, just as his kind hostess was making a fire in the kitchen stove. Then he went out to the barnyard and peeped through the bars of the gate to see Mr. Taylor milk the cows. After breakfast, the children were shown around the place and told that they were to amuse themselves as they liked until they heard the horn calling to dinner. To them it was truly a wonderland. In the orchard there were trees hung thickly with yellow harvest apples, and others with purple plums; the cows were grazing quietly in the pasture, and everywhere broad stretches of verdant turf without a single warning sign to "keep off the grass."

END OF CARL'S MINSTREL CONCERT.

"Oh, dear," said Bertha, "how nice it must be to live all the time in the country!"

"Yes," answered Carl; "when I am a man I will be a farmer and you and Lena shall come and milk my cows."

After they had strolled clear to the woods and back, the horn sounded from the kitchen door, and three hungry, heated and happy children were soon seated with their entertainers at the table.

After dinner, Bertha and Lena went up to their little bedroom for a nap. But Carl insisted that he was not tired nor sleepy, and strolled off alone to the lower end of the orchard, where he sat down under a large apple tree. A flock of blue jays flew screaming and chattering around a tall maple in an adjoining lot; a gray squirrel ran along the top of the fence and up the tree, where he sat barking at Carl; a small gray woodpecker hopped up and down the trunk of an apple tree, occasionally stopping to beat a tattoo on it with his bill. The air was filled with sunshine and a languorous undertone of humming insects. Carl suddenly noticed a brook flowing across the lower corner of the orchard with a large rock beside it which he had not observed before. Soon there came marching along half a dozen little men no taller than the length of a shoe brush. Each of them wore knickerbockers, a wide collar and a funny peaked hat with some cock's feathers stuck in it, and carried a little violin under one arm in a bag. They all sat down on the rock in a row and drew the violins out of their bags. "Now," thought Carl, "we shall have a minstrel concert." The little fiddlers drew their bows and began a performance unlike anything that Carl had ever heard before. Instead of playing a tune, each one kept scraping his bow across one string, making a sharp monotonous creaking. Pretty soon a little green frog climbed up on the rock just above the others. He sat upright and pulled out from somewhere a tin horn like those which Carl had seen the boys blowing New Year's eve. The little frog drew in his breath until his throat stuck out like an inflated bladder, put the horn to his mouth and began to toot. But instead of a hoarse squawk, there was a shrill, strident noise, which drowned all the other sounds and made the air fairly quiver. Still the small fiddlers kept sawing away. Carl looked around and saw a small object coming through the grass. "It's that squirrel," he thought. It was not the squirrel, but a little man dressed like the musicians, mounted on a large gray rat. In one hand he held a lance with a pennon on it, which Carl had at first mistaken for the squirrel's tail waving above the grass. The little man made straight for the minstrels, who, seeing his long lance, ran and hid behind the rock. The frog threw away his horn and sprang panic-stricken for the brook. At this moment a great gray cat rose from behind the rock with hungry eyes fixed upon the rat-steed that the little warrior was riding—"Carl!" "Carl!" It was Bertha's voice. Carl rubbed his eyes and looked around. The brook with the rock and all the little men had vanished. The old maple stood just beyond the fence. The squirrel was no longer there, and the blue jay shad flown. Still the grass was full of sharp creaking noises like those the little fiddlers had made, and in the tree over his head something was keeping up a shrill, piercing hum like that of the frog's horn. When Carl and Bertha reached the house, supper was ready. Carl asked Mr. Taylor about the voices in the grass and the loud shrilling above. "Oh," said he, "it is the grasshoppers and locusts. The noisy insects are called locusts, but they are in fact cicadas or harvest-flies. They are green, with hard wing-cases which they rub together rapidly to make the shrill noise you heard. The grasshoppers and crickets make their chirping in the same manner." Carl said nothing about the little fiddlers or the frog, for he felt quite sure he must have been asleep and dreamed it all out.

Two delightful weeks in the country sped away all too quickly, and the children had to leave the green fields and pure air for their close room. But the old farmhouse seemed dreary and desolate after the little visitors had gone. There was no patter of small feet upon the stairs or merry ripple of children's voices around the orchard and barn. A few weeks later, Mr. Taylor appeared one morning quite unexpectedly at the door of the room in Rivington street. There was a joyful greeting

from the children, and as soon as he was seated, Bertha was on his knee, Carl stood at one side, while little Lena, with thumb in mouth, leaned against the other. After a few preliminaries, he went straight at the object of his visit.

"We are getting old," he said, "and mother ain't overly strong. Now if you'll come to the farm and help her out with the work, we'll make a home for you and the children. They ain't no bother at all,—we had rather have them there than not." It did not take long to agree on terms, and before another week the poor mother had closed up her small affairs in the city, and with Carl and Bertha and Lena become fairly settled in the Taylor household. So at last all three became really and truly "Fresh Air children."

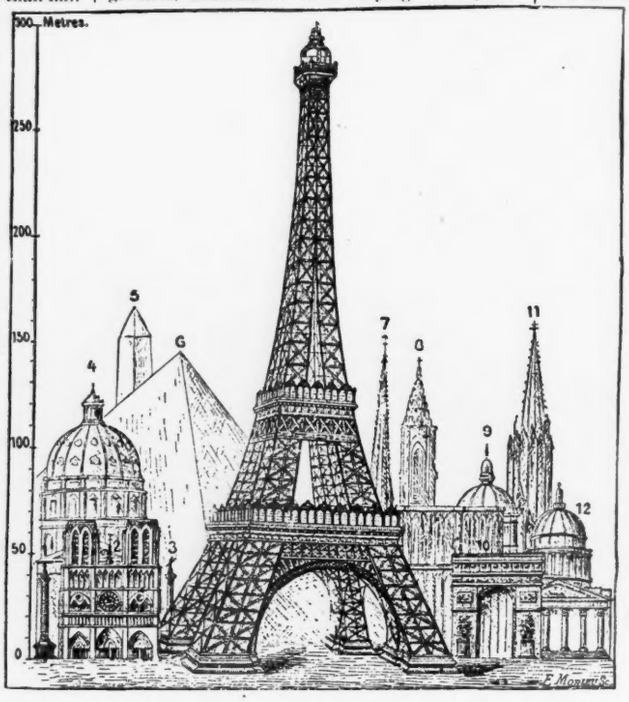
A Marvellous Structure.

What is the highest structure in the world? "The Washington monument," hundreds of children will answer at first thought. This would have been a correct reply a year ago, but now the great Eiffel (pronounced I'fel, with the accent on the first syllable) tower at the Paris Exposition reaches far above any other work of man. Our picture shows how it towers above the other monuments of the world. It will be seen that the Washington monument is but little more than half as high as the Eiffel tower, the latter being 300 meters or 984 feet in height. Contrast this with the height of the other structures shown in the engraving:

The Eiffel Tower.....984 feet.
No. 1—Column of Vendome....139 feet.
No. 2—Notre Dame(Paris).....217 feet.
No. 3—Column of Juillet(Paris)131 feet.
No. 4—St. Peter's(Rome).....432 feet.
No. 5—Washington monument 555 feet.
No. 6—Pyramid of Cheops.....480 feet.
No. 7—Cathedral at Rouen.....492 feet.
No. 8—Cathedral at Strasbourg465 feet.
No. 9—Les Invalides(Paris)....344 feet.
No. 10—Arc de Triomphe(Paris).161 feet.
No. 11—Cathedral at Cologne...522 feet.
No. 12—Pantheon (Paris).....279 feet.

Each one of the four corners on which the superstructure rests is three hundred feet square on the ground and the foundations are sunk far into the earth. So perfectly are the parts of the tower adjusted, that the strain on the foundation is no greater for each square foot than that of the usual five-story house. The tower is built of iron, many of the pieces being shaped like those employed in building suspension bridges. These iron girders are not great thick masses of metal, but light and narrow ones, with flanges on each side through which the bolts run that put the whole together. It is a very airy and open structure, and therefore does not sway in the wind. At a distance it looks much like lattice work. The first gallery is 230 feet from the ground. Here are restaurants, halls for public meetings, little stores and promenades. The second gallery, at a height of 377 feet, measures about 100 feet on each side, and in addition to restaurants, etc., contains a printing-office, where the Eiffel Tower edition of the Paris *Figaro* is printed every day. There is a third gallery not shown in the engraving, at a height of 861 feet, where there is a room thirty-two feet square, surrounded by a balcony. One hundred and twenty-four feet above this is the top room and balcony. Two great elevators run up in the corner of the tower nearest to the right in the picture, and also in the furthest corner to the left. One of these elevators takes people up, and the other takes them down. They run as far as the second landing. Here you have to change for a second elevator, which runs straight up through the center to the top—a dizzy height. Through the open lattice work you can see the country far below, as you ascend at the rate of twenty inches per second. There are also stairways in the lattice work to the first gallery. These run from side to side, but the stairs to the second gallery are more circular, and from the second stage to the top they consist of simple small iron steps round and round one of the inside pillars of the square which forms the tower at the top. It costs two francs (forty cents) to ascend to the first gallery, either on foot or in the elevators, and another franc is charged for the second landing, with other fees to go to the top.

Of course the plans for this great work all had to be made before even the foundations were commenced. The design of every piece of iron and of every bolt, and all the joints, was perfected before a stone was laid. There are over 12,000 pieces of iron in the structure, and to rivet them together 7,000,000 holes were drilled. The plans had to be so made that these holes would all come together properly, so that the rivets would fit and the whole be safe and strong. Indeed, it took 2500 sheets of drawings showing how the pieces were put together, besides 500 designs by engineers, to give correctness to the structure in its conception, and to guide in its erection. It cost about $1,300,000. It is built on the Champ de Mars, near the river Seine, and is the central figure in the great centennial exhibition that the French nation has now in progress. A company of capitalists paid for the structure and own the tower, having been given by Paris the free use of the land on which it stands for twenty years. At the end of that time the tower is to become the property of the city without payment. But it is probable that long before then the money received for admission fees to the tower will pay for its cost several times over. At night the tower is brilliantly illuminated by gas and electricity, and from the top a revolving electric light throws its powerful rays all over the great city and far into the surrounding country. The vast array of fountains on the Exhibition grounds, illuminated with varying colors, also



THE HIGHEST STRUCTURE IN THE WORLD.

reflect the bright rays of the highest lamp in the world, and with the background of the highly-gilded and artistically-designed fair buildings, form an evening picture never before equalled for brilliancy, extent and harmonious effect.

Strawberries and Cream.

GILLETTE M. KIRKE.

"Well, Maud, what shall we do? I'm tired of 'searching after the unattainable' idea. You ought to have a whole colony of them behind that much-wrinkled forehead. Come, if you have thought of any possibility, tell me."

The two girls were sitting in a chamber of an old-fashioned rose-wreathed farm-house, situated at the end of a long, straggling village street. Maud, a tall, fair-haired, blue-eyed beauty of twenty years, occupied a low rocker by the window, while saucy, vivacious Grace, three years younger, was swinging her feet, in school-girl fashion, from her perch on the foot of the bed. The girls had just graduated at the academy in a neighboring town, where they had been sent with the expectation of a college course when prepared; but a talk with their parents had shown that this was impossible and sent them upstairs to form plans for the future.

Mr. Harris, the father, had been ailing for several years and obliged to hire all his farm work done; his doctor's fees had been large, and the girls' expenses at school had added to the burden, till he had been forced to mortgage his farm. Matters went from bad to worse; the interest could no longer be paid, and foreclosure was threatened. This disclosure was a painful surprise to the girls. They had been away from home nearly all the time for three years, their vacations having been spent among relatives in distant towns, and had no knowledge of the true state of their father's affairs. Now they were eager to help lift the burden which their expenses had made heavier; but now? Mrs. Harris had all she could do to care for the invalid and the household. It was clear that the girls must be bread-winners, if there was to be bread in the mouths of the family.

"If it was only autumn we might teach," sighed Grace, "but something must be done at once. What shall it be?"

This question caused a long silence, broken by Grace's impatient "Well, Maud, what shall we do?" with which this story opens.

"I've thought of something, Grace, but whether it is a possibility or not I don't know," replied Maud, slowly.

"Well, *what* is it? How slow you are!" cried Grace, slipping down from her perch to the floor at her sister's feet. "Are we to turn poultry mistresses and bring in sixteen or eighteen eggs a day from four hens and a rooster, as Mary Lane did in 'How One Girl Made Money'? Or shall we be dairymaids, and peddle milk and butter, at unheard-of prices, to the summer boarders? I am afraid my powers of miracle-working are not far enough developed to make either plan a success."

Maud laughed, but provokingly kept silent.

"Oh, Maud, I am in despair! Tell me quickly what is your idea."

"Will you promise not to laugh at me?"

"I'll promise anything if you'll only tell me."

"Well, Gracie, I don't propose that we turn dairymaids exactly, but something very similar. You know we have always sold strawberries at the market and at the hotel. I suggest that we sell them here instead. We can set little tables out under the trees, and serve strawberries and fresh cream, and perhaps make a little money."

"Oh! oh!" cried impulsive Grace; "and we'll be strawberry girls! Then, the Harris peaches are famous; why not sell them, too, when they are ripe? And we have raspberries and blackberries, and blueberries, too. Why, Maud, it's an inspiration!"

"An inspiration which means hard work, Miss Butterfly, as you'll find out before the summer is over, if Mother consents to our trying the scheme. Come, let's ask her about it."

She started up as she spoke, and the two girls ran down stairs and out to the hammock where their parents were sitting. Grace began with the question,

"Oh, Mother, can we have a strawberry festival all our own?"

Maud, seeing the grieved look which flitted across her mother's face at the thought that the girls were planning new pleasures so soon after the impending ruin had been disclosed to them, hastened to explain her plan and ask if it was practicable.

"It is such a pleasant place out under the elms; and then, Mother, you know berries freshly picked never taste like those which have been standing awhile," Grace urged.

"And we might have ice-cream, too," added Maud. "You know Brookfield is such a quiet place; I'm sure the city visitors must get tired of doing nothing sometimes, and perhaps would be glad of the pretext for a little walk."

"Especially when it is too hot to drive over to Daleyville," added Grace. This was the nearest railway station, a noisy little factory town about three miles farther east.

Mr. and Mrs. Harris at last consented to let the girls try their plan, and the next issue of the Daleyville *Transcript* contained an announcement that the Misses Harris at Rose Cottage, Brookfield,

would be prepared to furnish strawberries and cream, iced milk, cake and ice-cream, etc., after a certain date.

The girls were very busy during the week preceding this announcement, making arrangements with a city confectioner for a supply of ice-cream, to be forwarded by the stage from Daleyville, hiring suitable dishes, and collecting all the old-fashioned stands and small tables the garrets of the neighborhood afforded. These were covered with clean white cloths and decorated with nose-gays of great spicy, old-fashioned pinks from grandmother's garden behind the house. Some of the tables were scattered about under the great elms which drooped over the lawn; others were grouped under a large tent, hired of a shore-loving neighbor.

"We couldn't have had a better day if we had made one to order," Grace asserted; "and it is lovely out under the trees."

They had a number of "flyers" announcing their "opening" printed and distributed through Brookfield and Dalyville, but were taken by surprise at the number of city boarders who strolled down to see what was going on. Business was brisk all the afternoon, but when the Chinese lanterns (carefully preserved relics of the previous Presidential campaign) were lighted in the evening, it seemed as though all Brookfield and Daleyville had turned out to make the opening a financial success. Their supply, both of berries and ice-cream, proved inadequate to the demand; failing these, the Daleyville gallants, who had driven over with their lasses, bought the fragrant roses and spicy pinks, and reluctantly drove back.

When the proceeds were counted, after the last loiterer had strolled away and the lanterns had been carefully extinguished and put away for future use, even Mr. and Mrs. Harris acknowledged that the enterprise had been successfully started. Grace was jubilant; even stately Maud was delighted.

"If we do as well as this every day, Maud, it will be Vassar in autumn, instead of a dingy little district school-house," said Grace, that night, as they laid aside their snowy caps and aprons.

"Yes, but we must not expect too much," was Maud's answer; but her eyes sparkled as brightly as Grace's own at the thought.

The city visitors did not forget the quaint outdoor resort, with its pretty white-capped waiter-girls; indeed, Maud and Grace were compelled to hire assistants most of the season, though, of course, all days were not as successful as the first had been. They soon learned to make their own ice-cream, counting the extra work as nothing as long as it added to their profits. Other fruits followed the strawberries in their seasons, and the experiment proved a decided financial success.

The fame of their choice fruit and rich cream, the tables under the elm trees decked with old-fashioned flowers, attracted the city boarders from the neighboring towns among the hills, and a drive to Rose Cottage for a lunch became the fashion of the season. It was a busy but a profitable summer; not only was the interest on the dreaded mortgage paid, but a slice of the principal as well.

Grace went alone to Vassar, after all, for a wealthy New York artist had won pretty Maud's heart, and at Christmas time there was a quiet wedding in the quaint old farm-house which the girls' success had saved to Mr. Harris.

Best of all, with the relief from wearing anxiety and the fear of losing his home, their father had recovered his courage and cheerfulness, his health was gradually improving, and the hope had now become almost a certainty that he would soon be well and strong once more.

Grace graduated in due time with high honors, and is now the successful and dearly-loved principal of a large school for girls, but every summer finds her with Maud and her children at Rose Cottage.

OPENING EVENING AT ROSE COTTAGE.

A Lazy Man's Mill.

When the first settlers came to North America they found the Indi using a pestle or mortar to crush the maize which formed their chief vegetable food. In South America the natives had progressed farther and had contrived the Monjolo, which may be truly styled a lazy man's mill, for while it saves man's labor, only a very lazy man would be willing to await the result of its operations. In form it is like a huge, wooden hammer, balanced half-way up the handle on a pivot. At the end of the handle opposite the hammer is a hollow scoop; into this a natural stream of water is directed, and when the scoop is filled the extra weight forces it downward, when the water runs off. Thus released from the weight the hammer end returns suddenly to its former position, giving one strong blow in the receptacle made to hold the rice or corn. Thus it goes on day and night as long as the stream runs; a monotonous thud, a creaking groan, the sound of a splash of water; a thud, a groan, a splash, over and over, until at last the grain having been coarsely broken is taken out and the mortar is re-filled.

Medusa's Head.

Among the ancient Greeks the name of Medusa was given to a very unpleasant-looking female whose hair was a mass of angrily writhing serpents. Fortunately she ceased to exist about the time when it became the fashion to require proofs of the truth of every statement, but her name has been given to one of the vast variety of creatures which live in the sea. The Medusas of the sea are really pretty things, sometimes of a pure white and sometimes very brightly colored, which float or swim or seek their prey by creating tiny whirlpools by the swift waving motion of a number of delicate branches or arms, thus driving the animalculae on which they live into the Medusa's ever-hungry mouth. It is these soft, waving, branch-like arms which are supposed to bear a resemblance to Medusa's serpent-hair and have given her name to the sea creature which is doubtless a terrifying object to its victims, though a pretty and delicate one to our eyes. Various legends are related of the mythical Medusa.

FROM NEAR AND FAR.

A Glimpse of Tropical Florida.

Away down in the southern extremity of Florida we have a climate unlike any other part of the United States. A large part of this great country is almost unknown, save to the few hundred Seminoles who yet hunt the deer and wild turkey in the everglades. The Gulf Stream sweeps north between the Bahama Islands and the east coast of Lake Worth, and gives to the dwellers on the river and upon the main land of Florida south of Jupiter, a nearly tropical climate. Its products and its modes of culture, like its climate, are peculiar to itself. We have few interests in common with the producers of wheat and wool, corn and cotton. There is a region almost as large as the old Bay State, remarkable for its mild, even and healthful climate, where fogs and frosts are seen only at long intervals of time, and where the thermometer never reaches excessive heights in summer. As a result we have a large variety of tropical and semi-tropical fruits and flowers. Of the latter the most delicate and tender can be grown everywhere, both winter and summer, without a thought of protection. It is also the region of winter gardens, where the choicest of vegetables are successfully grown from September to May.

The most notable object that strikes the Northern visitor is the cocoanut palm, that everywhere abounds. These trees, with their vast fronds, often twenty feet long, bowing gracefully to every breeze and standing guard over immense loads of bloom, green and ripened fruit, ready to fall on any careless head, tell the traveller that he has passed beyond the region of the apple, the pear and the peach. He has come where even the orange no longer takes the lead as in Central Florida. The more tender lime and lemon are here at home. As one passes from place to place he meets everywhere the most tender varieties of the guava growing into immense trees and yielding fruit. On every hand one sees the pineapple and the banana, the latter yielding its delicious fruit every day in the year. We meet with the various anonas, the sapodilla, mango, avocado pear, tamarind and many other tropical and subtropical fruits, the existence of which in Florida is hardly known to the outside world.

E. GALE, Dade Co., Fla.

Vegetables and Fruit in Montana.

In the course of a rather leisurely trip last spring through the valleys of the Milk and Sun rivers in Northern Montana, I made special effort to study the capabilities of the region for successful culture of vegetables and fruit. The land is rich; the climate is suitable for most vegetables. Potatoes will yield from four to six hundred bushels to the acre, and of as good a quality as can be raised by the aid of commercial fertilizers. The egg-plant and other vegetables of a tender nature are successfully grown. I saw fine gardens at Fort Belknap and other localities. Last year at the Montana territorial exhibition were Hubbard squashes weighing from forty to sixty pounds each. In all the Milk River Valley vegetables can be raised with abundant yield. I found in Sun River Valley raspberries growing wild, and in cultivation was a variety which I took for the Cuthbert, growing better than around Minneapolis, and without protection. Owing to the Chinook winds, which sometimes come so warm after the severe cold as to start the buds, they plant their bushes on the north side of tight board fences, this being their only protection. Currants do well, the Red Dutch being perfectly successful. Of gooseberries the Houghton seedling and Downing are eminently successful. One grower told me they did very well for the first two or three years and then mildewed. His bushes had been planted about five years, and had grown very large, and as thick as hair on a cat's back. He said he had thinned out some of the bushes, and the mildewing stopped. I showed him how to thin out properly, as it was clear that overcrowding caused the mildew. Investigation showed that there were native currants, gooseberries, blackberries, raspberries and strawberries. The next Legislature of Montana should protect her natural fruits, as from the seedlings of these will probably arise the best varieties of fruits that they can have. Plums in the mountains are abundant and of good quality. They are sold from the Indian reservation at twenty-five cents a bushel. Will strawberries grow near Fort Belknap? A strawberry grower I talked with at that place raised last year 1200 quarts, and this year hoped to raise 5000. He sells them at twenty-five cents a quart net. J. B. ROGERS.

The New Jersey Tomato Crop.

The tomato canning establishments here will not run to their fullest capacity this season; and the same condition of affairs is reported from other canning localities, so that the out-put of the canned article will probably be smaller than it has been for some time. The prospect for this season is for higher prices, and the home gardener will do well to bear this in mind, and do up his own supply, rather than depend upon the grocery for it. When new glass jars can be bought at six or seven cents apiece for quart size, and but little more for half-gallon size, and ripe tomatoes grow plentiful in one's own garden, it is cheaper to do up the supply at home than to buy the cannery goods, even if the jars were not worth a cent apiece after the first season's use. And what is more, all danger of tin poisoning is avoided besides.

Owing to late planting and poor plants, many fields of tomatoes grown for the canneries mature only half or two-thirds of their crop. This management always greatly reduces the gross returns, and often entirely swallows up the profits, which, indeed, are not so large that the grower could afford to grow less than a full crop. Late planting, when intended for sale at the canning establishments, would be admissible in our congenial climate and soil, provided well-grown and well-advanced plants are used. Here is the rub. The tomato farmer only too frequently depends on good luck to obtain his needed supply (from someone who has a surplus, or who makes a business of growing late plants) at $1.50 to $2 per thousand. The demand then is nearly always much greater than the supply of *good* plants, consequently thousands of small, spindling, rootless plants are set out that cannot be expected to bring more than a part of the fruit to maturity. Others grow their own plants and set them out early, but lose many of them by a late frost, cutworms, or by other causes, and then, their own supply being exhausted, have to hunt up such plants as they can get.

Tomato plants — and good ones, too — may be grown so easily and cheaply that there is no excuse for anyone who intends planting largely to do otherwise than raise all he may possibly need. Nor should the available home supply be exhausted before the period of danger to plants has entirely passed. T. GREINER, Monmouth Co., N. J.

Effects of Frost and Rain in Western New York.

The season started in with considerable disappointment to the farmer, gardener and fruit-grower. The consequences of the hard frost May 29-30 will make themselves felt for a long time, especially during the harvest season, and leave many a pocketbook empty that otherwise would have been well filled in the autumn. The earliest-planted potatoes suffered terribly, and the crop is retarded and cut short in consequence. There are enough planted later, however, so that a potato famine—in spite of bugs in plenty—need not be feared, unless the season, exceedingly moist up to this time, should breed rot.

The first plantings of tomatoes, of course, were killed to the roots. They always consist of the finest plants, and often of the entire stock; in many cases, on account of lateness and general promising outlook of the season, not a single plant having been held in reserve. The canneries, prepared for a smaller output than for several years, will probably have even less material to work up than they expected and contracted for. This may be a lesson to tomato-growers, by showing them that it is never safe, in this climate, to set the whole supply of plants before June, and that enough plants should always be grown to have a reserve stock for an unforeseen emergency.

The great lesson of the frost to the fruit-growers and gardeners is that a little protection often goes a great way with them. Strawberries under the shelter of trees, or in protected situations, escaped uninjured, and gave the earliest fruit, while in whole open fields the crop was reduced to a fraction, and that of the later setting of fruit. I also noticed some instances of early potatoes escaping harm when in such sheltered location. Almost all tree fruits, plums perhaps excepted, were seriously injured. Grapes in exposed situations not only lost this year's crop, but perhaps were weakened for next year's bearing. One of my neighbors has a fine five-acre Niagara vineyard, but no fruit left on it. All tender vegetables exposed that frosty night were cut down, and vines, corn, etc., are much later than usual in consequence.

The prolonged period of excessive rainfall in June also had its lessons, showing in many instances the effectiveness and profitableness of drains on lands with clay subsoil. Wherever the drainage was perfect crops could be planted and the land worked during intervals between rains. Where drainage was lacking the rains stopped all further operations until some time after the cessation of the rainy period, and consequently many pieces of corn were not planted until the latter part of June, and the crop, in consequence, is late, and liable to be caught by frost before maturity.

T. G. R., Niagara County, N. Y.

Public Roads in Ohio.

It has been said that the state of civilization of any section may be known by the condition of its highways. If judged by this, some citizens of Ohio could scarcely escape being classed as barbarians. I recently passed through that State from the Indiana line to Cleveland, over some of the worst roads I ever encountered. The highways and byways were all a sea of mud from fence to fence; a little too thick for boating, and not thick enough for mortar. The land in Lorain county is a dead level, the roads broad and flat, the gutters wide and shallow, so that teams cross, re-cross and "criss-cross" in all directions, vainly endeavoring to find a spot with a bottom to it. I saw only two loaded wagons, in an entire week, trying to effect a passage. One, with two teams, had on a medium-sized saw-log. In places the wheels sank nearly axle deep, and threw up ridges of mud like furrows after a plow. The other load was about five hundred weight of straw, and it careened from side to side like a sailboat in a choppy sea. The farms appeared good and well cultivated, and the landscape was dotted with substantial and even elegant farm-houses. This proud commonwealth is so noted for its great number of eminent statesmen and able agricultural writers it is a wonder that its people have to flounder through the mud for six months in the year. The roads cannot be made passable by individual effort; it must be done by the State. But I was assured the farmers would vote down any proposition to make passable roads by a State tax, although many of the best citizens are in favor of it. It is quite different in Indiana. There the State has turnpiked and graveled all the main roads. In a drive of a dozen miles in that State the carriage felloes were not covered with mud. GALEN WILSON, Grant Co., Ind.

Irrigation in Colorado.

The subject of improved irrigation in this country is attracting more attention this season than it has ever received before. It is gradually taking rank among the sciences, and Yankee ingenuity is doing much toward developing "all there is in it." It is worthy of note that it is principally the young men and the newcomers who are doing the most toward promulgating irrigation. Colorado to-day has over 6,000 miles of irrigating mains and twice as many miles of laterals. Mr. J. C. Henry, of Denver, is the heaviest builder in Colorado, having constructed half a dozen of the greatest canals in America. His latest enterprise was in Bent county, where he extended the Haskell ditch for a distance of nearly one hundred miles. He excavates his canals very rapidly by the use of steam machines, which work somewhat like a river dredger. He is now introducing a new plan which he calls "ground-sluicing." By this he uses hydraulic power in wearing down the deep cuts through which his canal is to pass.

He is also building a number of reservoirs; one of these near Lamar will hold sufficient water to cover 200,000 acres of hitherto arid land. Another of Henry's innovations is a great syphon under the Haskell ditch to convey water therefrom to a side reservoir, which, in turn, will supply 60,000 acres more.

Sub-irrigation is making considerable headway in Colorado this year, as also is that artificially obtained from beneath the surface by means of steam vacuum pumps. Seepage supply, which delves deep down under the beds of dry water courses and there finds a surprising flood of water, is also a practical system but lately undertaken.

A three-foot pipe to Denver from dry Cherry creek is fed in this way and brings down a vast volume of pure water.

The government surveys now being conducted by Major Powell preparatory to great reservoirs, are working up an impetus for the arid districts. Senator Teller is the father of an immense canal scheme in the Arkansas valley. The best minds of Colorado are busy devising ways and means for the utilization of water, capital is coming largely to our aid and we are marching on in the direction of a grander land than Moses pointed out to the children of Israel. LUTE WILCOX, Denver, Col.

A California Stock and Dairy Ranch.

The Hollenbeck ranch has eighteen hundred acres of stock range, two hundred acres dairy range and the balance of one thousand acres is devoted to fruit, vegetable and grain. It is in Los Angeles county, in a range of fine hills. The fruit, vegetables and grain land extends into the far-famed San Gabriel valley. Several springs and natural streams supply plenty of clear water for stock and irrigation. For winter feed for stock we have the mesa and valley lands, and for summer the hills. Beautiful live oak trees offer kindly shade during hot days to stock, and the majestic sycamores adorn the landscape, while the wild walnut is abundant enough to furnish hundreds of cords of fire-wood each year. The highest peak in the range of hills is the ranch landmark. Approaching the ranch through beautiful orange orchards, vineyards, peach, apricot, pear, fig and minor fruit orchards, lovely country homes with evergreen hedges and rows of eucalyptus, mammoth beds of callas blooming in the open air, rose bushes in profusion and many choice flowers and plants and numberless white stakes glistening through the barley, the relics of some projected town which died booming, we arrive at one corner of the ranch. The road from the gate to the ranch house passes through a large pumpkin patch, one item of summer feed for dairy stock. On a mesa near the hills is the ranch house, surrounded by barn, stables, corrals, creamery, dairy, mill, shop and granary. It is a cozy eight-room cottage, nicely finished, and, set in an orchard of orange and other fruit trees, surrounded by cypress and eucalyptus. The dairy and creamery building consists of a low room under an immense water tank for cool room, and a one-story house of a single large room. The old-fashioned shallow pan system of getting the cream has been until late the tedious method used here, but now deep cans set in a tank of cold water have taken their place, and soon they in turn will be replaced by a centrifugal separator. The dairyman may be seen engaged in looking after the barrel churn or in running the butter working, or rolling the golden-colored stuff for the market. The mill is a two-story building with a high tower, on which rests a large windmill, which pumps a two-inch stream from a 120-foot well, keeping part of the stock in water, with plenty for domestic purposes and garden irrigation, and runs the elevator, grist mill, etc. The barn, fifty by sixty feet, has storage for the season's crop of hay in bales as it is put up in this country. The visitor came just in time to see a partial "round up," for soon the cattle are in, the big corral and the lariats swinging around until the "critter" singled out passes by, one of them on a run, when it is almost invariably caught around the horns first; then as it goes close enough to a post the rope is given a hitch around it and the animal comes to a sudden end of the rope. Another lariat is around its hind feet, and in another minute it is flat on the ground, and soon the ranch brand is in its hide. The prettiest sight among the stock is to see the horses coming to the corral almost daily, as they do in bunches of from forty to seventy-five, from the young spring colts to the old span of white mules that the former owner of the ranch crossed the plains with in '49. We will leave the charming cañons, sightly hill-tops from which can be seen green valleys, ocean and mountains covered with snow to the vaqueros in big Mexican saddles or small branches shaded by an immense sombrero, to look after the Texas long horns, while the more genteel dairyman looks after his herd of Shorthorns and Holsteins, together with their golden product.

E. AVERY MCCARTHY, Los Angeles Co., Cal.

Farming and Fruit Growing in Australia.

We have had a frightful year all over the colonies—so bad that the government is supplying seed wheat to the poorer farmers. Districts which in ordinary years would produce half a million bushels of wheat did not last season produce one-tenth of that. Hundreds of farmers did not reap a sheaf. We have no meadow grasses here, our hay being made from oats and wheat, cut green. Imagine cutting the entire hay crop of 350 acres for fifty tons! Three months ago potatoes were selling at twenty pounds ($100) per ton of 2,240 pounds. They are now down to one-fourth that. Hay is correspondingly high. Fortunately for us the local market for breadstuffs is low, as South Australia, Victoria and New Zealand send their surplus here. Another year like the past would tend to depopulate this colony. I am a native here, and have seen dry seasons before, but the last was the worst ever known here. I have had twenty-five years' experience as a miller, and ten as a tenant farmer. I spent one year traveling through the colonies of Australia, and am convinced that their agricultural value is greatly overrated. I now have a farm, twenty-five miles from any city. I am going to set fruit trees on my own plan of deep plowing and constant working. The usual practice here is to plow six inches deep, and then wonder why the fruit trees do not last twelve months. We have orchardists here whose fathers and grandfathers planted for them, and they follow closely in the same footsteps. I have been engaged in orchard work only a year, but can see defects on every side. For example, grapes are put up in boxes each containing three tiers of close boxes, the whole package holding twenty-five to thirty pounds of grapes. Peaches are packed in boxes of twice the size, rather more than a bushel. Such boxes do well enough for oranges and lemons, but not for tender fruits. We do not do much in berries here. I have about twenty acres in oranges, lemons, peaches, apricots, apples, quinces and grapes. Last year I got teams down from 120 miles up country to plow fifty acres more, but after trying their best they could only plow eight acres fifteen to eighteen inches deep. It was so hard it could neither be harrowed nor rolled. We have had a little rain and I expect to try again.

JAMES COCKS, New South Wales, Australia.

Flax-Growing in Iowa.

There is a very general complaint here that farming is not as profitable as it was fifteen or twenty years ago. One very obvious reason for diminished productiveness is the waste of manure and the cropping of farms year after year, without adding any fertilizing material to the soil. Another source of loss is the flax crop. This was formerly a more important crop than at present, though raised exclusively for the seed. No use is ever made of the fiber, but it is burnt to get it off the ground. To one coming from Europe, where the fiber is regarded as the principal part of the crop, this destruction looks like wanton and ruinous waste. It certainly seems very strange that the inventive genius of the Americans, so active in other directions, cannot devise some method of profitably separating the fiber from the woody mass in which it is embedded. A material so valuable for textile fabrics, cordage, and other purposes, is worth saving. If the flax straw can be made worth to the farmer as much per ton as hay, the flax crop will be a fairly profitable one.

J. C. METZER, Washington Co., Iowa.

The English Cheese Market.

There has been a much stronger and more general feeling that moderate prices must prevail; and this has been realized, notwithstanding that this year there has been little cheese received from New Zealand (in consequence of the drought in Australia), and thus strengthened the position for an advance had it been possible. Prices which two years ago were at 57 shillings and 59 shillings, one year ago 56 shillings and 58 shillings, have now declined to 50 shillings and 52 shillings. The disastrous seasons have so hampered importers that the market will be, more than ever before, directly influenced by the distributing section of the trade, who will buy only from hand to mouth, and it has been evident that there is a point which when reached, causes the demand to flow into other channels. It is beyond question that if during the summer months a low range of prices prevail, the consumption here is very largely increased, and our opinion is, that factorymen and exporters generally should do their part to cultivate and maintain this legitimate trading. It would in the long run pay them much better than drought scares, and short fall-make booms, which must ultimately recoil upon the producers. From our direct contact with all the leading centers (both here and on the American side), we have ample and reliable means of knowing the feeling on this question, and feel sure that the personal experience of all the agents and shippers now returning from the U. K. will confirm the remarks we have made.

SAMUEL BUDGET & SON, Bristol, England.

Northern Alabama for Agriculture.

Among the many interests in the South which are attracting the attention of the Northern people, are the agricultural possibilities of northern Alabama. Government still holds a large tract of land subject to homestead entry, but it is being rapidly taken by settlers from Georgia and the Northern States. This tract of land is the southwestern end of the great Cumberland plateau, exhibiting an undulating surface, well watered, and yielding abundantly of grain, cotton, vegetables and small fruits. The tract is divided by a north and south trunk railroad line, which makes it easy of access, and furnishes a ready market for all its products. The climate is somewhat remarkable, having a winter average of 45° and a summer of 77°. The rains are well distributed and a drought is not known. Statistics show it to be the healthiest section in the United States, not excepting California. It has been aptly named "the Terra Sanita." S. A. FELTER, Cullman Co., Alabama.

The Outlook in Western Oregon.

Coos county, on the coast of Oregon, is irregular in outline and has a length from north to south of about fifty miles, and a maximum breadth of about thirty. It has an area of about 700,000 acres. The general contour of the county is basin-like, with hills completely surrounding it and forming its rim, excepting on the western edge, which terminates at the beach of the Pacific. The two principal streams are the Coos River and the Coquille. On these streams are situated some of the finest farms in the State. The land is very rich and is specially adapted to root crops and dairying. The average potato crop without fertilizers is about 400 bushels per acre, but as high as 900 bushels have been raised on newly cleared land. Owing to its close proximity to the ocean it is specially fitted for dairying, as we can pasture our meadows from the middle of July, when we make our hay, until the middle of the following May. And owing to the mildness of the climate and frequent showers we have green pastures nearly all the year. There are six cheese-factories in active operation on Coos Bay and over twenty-five butter-factories. The cheese is fully equal to the famous Cheddar, and the butter brings top prices in the San Francisco market. Farming, however, is but a small part of the general industry of this region. The hills are covered with forests of fir and cedar timber, which is cut into logs and rafted to the bays, where they are sawed into lumber for the California market. Coos Bay has four saw-mills with an average daily output of sixty thousand feet each; and the Coquille has five, but not on so large a scale. Our coal mines are simply inexhaustible. Our harbors are good, and through the efforts of our Representative Herman, and Senators Mitchell and Dolph, liberal appropriations have been made for the improvement of our harbors, which will greatly aid the development of this region.

LIGGETTE LANDRITH, Coos Co., Oregon.

Progress in the Lone Star State.

Texas is one of the most bountiful States that the sun shines on, and this season she is enjoying a high degree of prosperity, for her crops are splendid. Factories are going up all over her broad area. Not of one kind alone, but of many branches of industry. A cotton factory with a capacity to work up 1,500,000 bales of cotton per year is one of the latest to make Texas its home. The State is worthy of the crown that she wears in regard to education, as she ranks in that respect with the first States of our Union. She pays more for education than any other, except New York, with a population four-and-a-half times as many, and taxable property five times that of Texas. New York expends for school purposes $5,300,000, Texas $2,750,000. The star of the Union is a planet in the galaxy, whose brightness equals its magnitude.

W. L. MOORE, Denton Co., Texas.

OUR BASKET.

Have You a Pretty Place?—If so, why not send a photograph of it to the AMERICAN AGRICULTURIST? If you think a picture of your flower garden or lawn, border plants, vine arbors, or of your house and buildings with their embellishments, would prove suggestive to our readers, we should be happy to receive photographs of the same, with a short descriptive article. Of course only those articles and pictures will be published that will convey to our readers some excellent ideas for beautifying and arranging their own homes or surroundings. Many farmers and village people would cheerfully beautify their homesteads if they knew just how to do it, and pictures of how others have really done it may prove far more helpful than the greatest amount of instructions in words.

Indian Corn for New Zealand.—Fred Swindley, Ahakotane, New Zealand: The maize cultivated here as a field crop is broadly divided into the two classes of flint and dent. The former is hard and glossy on the summit of each kernel; that of the latter is softer and slightly depressed or dented. The largest average yield per acre is of dent corn; but it does not mature as early as flint. For such a climate as you describe that of New Zealand, subject to early frosts, some of the varieties of flint corn would be most likely to succeed. The "Early Canada" is an eight-rowed yellow flint of good quality and early maturity. The Waushakum and Longfellow are improved seedlings of it, having larger ears and are more prolific. Any one of the three would be likely to succeed with you.

Best Hardy Roses.—S. B. Parsons, author of "Parsons on the Rose," writes us that for hardy varieties he likes best General Jacqueminot, La France, Caroline De Sausal, Baronne Prevost, Chas. Lefebre and Harrison Yellow.

Weeping Mulberry.—This recent introduction, an excellent illustration of which was given in our April number of last year, promises to fully merit all that has been said in its favor. It is very hardy, with a neat, clean and healthy foliage; the branches slender and as pendulous as those of the weeping willow. We welcome such novelties as decided and valuable acquisitions to our lists of hardy ornamental trees, and the more we have of them the better.

Bee-Moths.—"A Subscriber," Toughkenamon, N. Y.: Worms or bee moths injure only the German or black bees. The Italian, Cyprian, Albino, Holy Land or Palestine bees are all proof against the moths. The best preventive, therefore, is to change the stock, as any of the latter races are much superior to the former in every respect. There is no form of hives or fixtures that can be used to destroy or prevent the ravages of worms except by using movable frames, by frequent examinations and keeping them removed. To keep empty combs from their ravages, expose them to the fumes of burning sulphur.

Guesses on the Prize Crops.—The half million readers of the AMERICAN AGRICULTURIST are already beginning to wonder what will be the yield of the best acre of corn that secures our prize of $500. In order to obtain the views of farmers as to the limit of productiveness of an acre of corn, we offer the prize of a year's subscription to the AMERICAN AGRICULTURIST to the person who guesses most accurately the amount of the prize crop of corn. We will also give a similar prize for the most accurate guess as to the yield of the prize acre of wheat, and of oats, and of potatoes. Guesses should be sent in on a postal card addressed as follows: "AMERICAN AGRICULTURIST, New York, prize crop guess," and the full name and postoffice address of the writer should be given. It will only be necessary to state the name of crop and after it the number of bushels you predict will be in the prize crop, like this: Corn, 125 bushels; potatoes, 470 bushels; oats, 60 bushels; wheat, 40 bushels.

The Mistakes of Mutual Insurance.—The Juniata Farmers' Mutual Fire Insurance Company was started in 1879 and grew rapidly until it included all the farmers in its territory, insuring to the amount of $2,000,000. We have succeeded in giving cheap insurance, although we have met several losses our greatest mistake was in issuing policies on inferior property; the largest amount of losses were on old barns insured at twice their value. The greatest care should be exercised in selecting agents for mutual insurance,—men who have the interest and welfare of the company in view. One agent who looked out for himself more than for our company cost us more than all the rest, by taking application on property not worth insuring, regardless of the integrity of the owners.

W. H. KRUESE, Secretary, Juniata Co., Pa.

Native Copper.—William J. Foreman, Madison Co., Mont.: The metal you found in cleaning up the amalgam in your arrastra, and which would not amalgamate with the quicksilver and gold, is native copper. Some one may have dropped a copper cent into the arrastra or a piece has broken off from some part of your machinery and been ground up in the pit. Fine particles of gold had been pressed into the soft copper, and these fell to the bottom of the test tube when we dissolved the copper in acid for the purpose of determining its nature and purity. The copper is readily precipitated from the acid solution with iron.

Holding the Cow's Tail.—Asa A. Parker, Ontonagon Co., Michigan, writes that the following is the Lake Superior method of holding a cow's troublesome tail, while milking: Draw the brush of the tail into the inner bend of the left knee, when sitting down on the milking stool, and hold it firmly clasped by keeping the knee closely bent.

Treatment for Kicking Cow.—John Bengel, Jr., Sullivan Co., N. Y., writes us that he successfully manages kicking cows by buckling a surcingle around the cow, just in front of the udder, snugly, but not so tight that a finger cannot be inserted under it.

How to Stake the Plants.—L. Fisher, Green Co., N. Y.: Not a season passes by without the loss of thousands of choice and valuable plants, such as dahlias, chrysanthemums and clematis, just for the want of a stake for support. The best time to place a stake by the side of such plants is when they are set out in the spring. But as a support can be dispensed with at this time, it is not provided, and frequently delay ends in the breaking down and destruction of plants one regrets to lose. Whenever a person attempts to or proposes to cultivate such plants as we have named, or others requiring stakes for support, they should be made ready in advance of the planting season and placed where they will be ready for use when needed. We know from personal experience how difficult it is to provide such articles months in advance of the time they will be required for use. Still the facts remain all the same, whether we heed them or no.

Tall Oat-Grass in Tennessee.—M. G. Harris, Dickson Co., Tenn., sends us a specimen of this grass of extraordinary luxuriance. It measures six-and-a-half feet in height. Mr. Harris writes us that the grass has been grown in his county for twenty years. The seed from which the specimen sent us was grown, was sown last October on creek-bottom land that will yield from forty to fifty bushels of corn per acre, but the grass will also grow on the poorest of land in middle Tennessee. It makes an excellent hay sown with clover, and makes a good early and late pasture. There is no better grass for this section.

Do Grasses Mix?—Clover.—Charles E. Hoyt, Marshall Co., Ill.: Rye and wheat sown together will not spontaneously mix or hybridize with each other, nor do any of the various kinds of forage grasses. When blue grass is found occupying land which was formerly seeded to other grasses, it is because it ran the others out, and retained possession of the soil. The best time to cut red clover is when the blossoms first begin to turn dark. As soon as it is wilted it should be raked into windrows and put into small cocks. If allowed to lie and dry in the swath it becomes black and brittle, and the leaves are lost. Open the cocks, if there is violent fermentation, and after ventilation make them up again. Hay caps are worth more than their cost when rain interferes with making clover hay.

Gas versus Hog and Hominy.—Samuel Davidson writes us from Harmon Co., Ind., under date of May 21st: Corn planting is about done in this locality. The wheat crop is poor. It has been exceedingly dry for the last three months; no rain until last Sunday. There is plenty of fruit in prospect, but the general crops are only about one-half. Nothing but "Gas, gas, gas," daily, for breakfast, dinner, supper and lunch. It seems to take the place of hog and hominy.

The Elm Leaf-Beetle.—In some localities where this pest was exceedingly abundant and destructive last year, very few or none at all are seen this summer. Whether this is to be taken as an indication of the much-wished-for disappearance of the pest, or merely a calm before the storm, we will not pretend to say, but there is rejoicing on the part of the owners of exempt gardens, and we can do no less than to congratulate them on their good luck, even if it does not hold out for the entire season.

Lawn Sprinklers.—There are numerous varieties, but if much benefit is to result from watering grass it must be kept up. If grass be revived by a moderate watering, and then left to continued drought, its case will be worse than had it been left without this watering. Such is our experience with other perennial plants also.

Hibiscus coccineus.—This is a Southern species of the marsh mallows so abundant on the salt marshes along the Atlantic sea coast. But the Southern mallow has flowers of a much more brilliant color, as the name indicates, *i. e.*, scarlet, and very large and showy. The roots are not perfectly hardy in our Northern States and require protection in winter. The best treatment for this plant is to take up the roots in the autumn and store in boxes of sand in a cool cellar and then set out again in spring. If started into growth in April or the first of May, the plants will come into bloom in August and continue in flower until cut by frost. It is a very showy bedding plant, rarely seen outside of the gardens of our professional florists, but it deserves a place in the ground of all who love and cultivate flowers.

Topping.—It is very difficult for some men to place the large fruit in the bottom of the basket. While "topping" with the fruit is poor policy, it is not dishonest to make the peaches show at their best by turning the top layer so that the sunny or colored cheeks will be uppermost. Women's fingers are expert at this.

Whortleberries and Cranberries.—J. R. C., New Jersey: The cowberry (*Vaccinium Vitis-Idæa*) belongs to the same botanical family as the blueberry, but resembles it only as a wild crab-apple resembles a pippin. The tall, swamp-cranberry you mention as growing in Michigan is the *V. corymbosum*. Efforts have been made toward its artificial cultivation, but so far as we have learned they have never met with pecuniary success. The "Mountain cranberry," of which you write is the *Viburnum opulus*. It has no botanical relation with the true cranberry, but its handsome acid fruit is sometimes used as a substitute for it.

Time for Ewes.—A. Williamson, Washington Co., Va.: The period of gestation in ewes is about five months; but it has been known to vary thirteen days in the same flock, extending from 145 to 158 days.

Preparing for the Fairs.—Every member of the family should exhibit something. The farmer and his older boys will most likely exhibit animals and crops. Many make the mistake of feeding and pampering their animals preparatory to the fair until they are "fat enough to kill." For a "fat stock show" this may be well, but at the fair animals should be in good working order, or good salable condition, if one should wish to buy. The mother and older daughters may propose to ex-

hibit cake—bread would be preferable—and good wholesome bread without saleratus, or some such stuff, is not so common in families that a good article is not worth exhibiting. Of course the daughters will pride themselves on their needlework, and will exhibit fancy articles. This is well enough, but every fair should offer premiums for the best specimens of "patching and darning"—of course upon old clothes of both sexes. In short, let every member of the family who is old enough prepare something for the fair.

Grass for Northern California.—N. F. Larsen, El Dorado Co., California: Tall meadow oat grass (*Arrhenatherum avenaceum*) would probably meet your views as well as any one variety there is. It stands drought, yields twice as largely as timothy, and grows rapidly. It must be cut for hay as soon as it shows bloom, or it becomes hard and woody. The seed is sold in the chaff, fourteen pounds to the bushel, and about two bushels are required to seed an acre. It is the "evergreen grass" of the Southern States, and is quite largely grown from Virginia to the Gulf.

Grape Rot and its Remedy.—Louis de Fureux, Nottoway Co., Va.: The destructive black-rot of grapes is successfully treated by a preparation of lime and salts of copper, called the Bordeaux mixture. It is made as follows: Dissolve six pounds of sulphate of copper (blue vitriol) in sixteen gallons of water; and in another vessel slake six pounds of lime in six gallons of water. When the latter is cool pour it slowly into the solution, stirring constantly to keep well mixed. This is diluted at the rate of one gallon of the mixture to twenty gallons of water, and applied by being forced through a spray nozzle. These nozzles are described on Page 391 of this issue.

Weeds in the Lawn.—The very worst weed in the lawn grass is itself a grass—the "crab grass" often called *Digitaria*, but properly *Panicum sanguinale*. In some of the Southern States this grass is of value as supplying a poor hay. It is hardly observed in the lawn unless one looks for it. It seldom starts before this month, when its prostrate stems lie close to the ground, rooting at each of its many joints and forming a dense mat, which chokes the lawn grass and robs it of all moisture. It is an annual, and the only help is the mower, which will cut off the flower heads, and thus prevent seeding for another year.

Destroying Stable Odors.—F. G. Sheffer, Niagara Co., N. Y.: It is difficult to remove the smells imparted to the clothing by milking and the care of horses. But they may be largely prevented. Common land plaster sprinkled freely in horse and cow stables will absorb most of the ammoniacal odors. A weak solution of copperas sprinkled from a watering pot is an additional and very effective deodorizer. Of course all such means for maintaining purity are useless without perfect cleanliness and good ventilation. But with those and the simple appliances named, the air of the stable may be kept as free from offensive odors as that of a parlor.

The Rake Mightier than the Hoe.—It may seem like a Hibernicism that a good rake is the best hoe, if the rake have long, sharp teeth and is used before the weeds get too large among cabbages, cauliflowers and other plants that need frequent working. Try the rake early and often.

Farmer Visits.—Take an occasional "day off." If you have heard of some fine animal, excellent crop, some machine or farm implement, hunt it up and give it appreciative attention. Leave all your own matters at home. There is no more disagreeable visitor than he who does not discuss what you have to show him, but continually prates about what he himself has at home.

A Novel Implement.—Perhaps no single implement at the Paris Exposition is attracting so much attention as the Strawsonizer. In shape it appears something like a two-wheeled cart with some apparatus near the axle and a hopper above. It is an automatic distributor and will distribute in a minute spray either liquid or powdered fertilizers and insecticides in the form of a dry powder. The claim is made that it will also broadcast all kinds of fine grain in any quantity and with absolute evenness. The broadcasting of seeds, insecticides, fertilizers, etc., can be done at the rate of from four to eight acres per hour. It distributes these various articles in the form of a spray, spreading them more evenly in a subdivided condition than was ever before attained. This can be inferred from the fact that the Strawsonizer will distribute as small a quantity as fifty pounds of nitrate of soda per acre with great evenness, or one gallon of petroleum can be sprayed like fine dew over an acre. With the proper attachments the spray can be thrown over trees, hop vines, grape vines, etc., and will doubtless come into general use for applying Paris green and other insecticides to orchards, vineyards and potatoes, and all other crops. For distributing small quantities of liquid poisons or offensive matter, it is especially valuable. The machine is worked with one horse and a boy to drive. The practicability of the machine seems to have been thoroughly demonstrated by repeated tests last year, and this season several Strawsonizers are at work in England and France. It is probable that the Strawsonizer will be on the American market in 1890.

Buhach and Rosebugs.—Mr. E. S. Carman, editor of the *Rural New Yorker*, desires us to tell our readers that he was the first to discover that buhach, either in powder or water solution, will bring the bugs down in twenty minutes or less if applied during their short period of existence. This is somewhat of a surprise to us, as we have from the first been so enthusiastic about the efficacy of buhach that we have tried it against almost every insect pest, but in the latter case without meeting with the success our friend Carman says he has had; and then, the yellow powder disfigured the roses nearly as much as the beetles did. However, we shall give buhach another trial on rosebugs.

Buffalo Clover.—A Reader, Raton, New Mexico: The bunches of red clover which you have often found growing wild in New Mexico and other parts of the West are not of the cultivated species run wild, as you suggest, but a genuine native clover, known to botanists as *Trifolium reflexum*, but usually referred to others under the name of Buffalo clover. It is a rather rare plant east of the Mississippi, but west of it is quite common, especially in some of the valleys in the Rocky Mountains. It is quite a hardy species, but being an annual, or at most only a biennial, it is scarcely worthy of cultivation, because we have better and more vigorous-growing species from the old world. Sometimes the flowers of this wild Buffalo clover are white, but they are usually of a reddish tint or rose color.

The Grain Plant-Louse.—A. Phillips, Knox Co., Indiana: The so-called "green bug" which has infested the wheat fields is not an entirely new pest, but the grain plant-louse of Europe, which was first noticed in this country in 1861. It is a minute blueish-green or pale-brown aphis, no larger than the eye of a house-fly. In form it resembles the green fly or plant-louse so common on house-plants, and like them a part are wingless, and others have large gauzy wings. Small as it is, the grain plant-louse does much mischief by sheer force of numbers, crowding the stems and green heads of wheat in masses, and sucking out the juices. Warm, dry weather favors its propagation.

Strawberries in Boston.—At the recent rose and strawberry exhibition of the Massachusetts Horticultural Society the Sharpless took the first prize for the best ten baskets of two quarts each of any berry not previously exhibited. The Belmonts on exhibition showed a very decided tendency to green tips. The silver medal for the best new seedling was awarded to Stephen Hoyt's Sons, for the "Yale," a new berry of very fine appearance.

Trapping Rose Beetles. — The common rose beetle often swarms on grapevines just at the time they are in bloom, for the flowers appear to be an attractive morsel of food to these ever-abundant pests. Although this insect feeds almost indiscriminately upon a great variety of plants, it has a preference for certain kinds, and by availing ourselves of their taste in such matters, we are enabled to attract them to positions and places where they are most easily and conveniently destroyed. From many years of experience and observations I have found that the flowers of certain species of the Spiræa are more attractive to this beetle than those of the grapevine, and if given the opportunity they will flock to these and leave those of the grape untouched. There are numerous species of the spiræa, but the two which seem to serve the best purpose as traps are the *Spiræa aruncus*, or Goat's-beard Spiræa, and *Spiræa sorbifolia*, or Soft-leaved. The first is a hardy native herbaceous plant, coming into bloom in spring, with the first appearance of the rose beetles, or in this vicinity about the last of May. The soft-leaved spiræa is a rapid-growing shrub from Siberia, producing long and large spikes of pure white flowers in June and July. The rose beetles flock to these flowers, from which they are readily gathered by jarring into a vessel of water, and afterwards destroyed. My grapevines have not been infested with rose beetles since I adopted this mode of protection nearly or quite twenty years ago. Both of the spiræa named are well worth cultivating for ornamental purposes if for no other. A. S. FULLER.

American Nurserymen.—The annual convention of the American Nurserymen's Association, in Chicago, June 5th and 6th, was a notable gathering, the attendance numbering nearly three hundred members, embracing most of the leading nurserymen of the country. The papers presented and the discussions were important and interesting. The following officers were re-elected: President, George A. Sweet, Dansville, N. Y.; vice-president, J. G. Carpenter, Fairbury, Nebraska; secretary, Charles A. Green, Rochester, N. Y.; treasurer, A. R. Whitney, Franklin Grove, Illinois. The next meeting is to be held in New York, opening June 4th and holding four days.

Bee Pasture in August.— In localities where there are abundant fields of buckwheat the bees appear to work just as industriously as they did among the basswood blossoms, the rich supply from which has now ceased. But besides buckwheat, the many golden rods and other members of the same family, the *composites* keep in flower until hard frosts, and afford an appreciable supply as long as it is safe for the bees to gather it. The honey from buckwheat has a flavor which to some is unpleasant, while others prefer it to honey from any other source. The honey from the many *Solidagos*, of which some species are found on high lands, and others in swamps, in great profusion, are a source of honey which has not heretofore been generally appreciated. Prof. A. J. Cook, who has devoted much attention to honey-producing plants, says of the golden rods: "They yield an abundance of rich golden honey, with a flavor that is not surpassed by any other."

Encouraging Window Gardening.—The Massachusetts Horticultural Society is accomplishing a very laudable work in encouraging the cultivation of window plants. A year ago last winter it issued a circular to those churches which had been accustomed to give away flowers on Easter day. It recommended giving growing plants in pots to children, instead of flowers. The suggestion was largely followed, but there was an immediate call for information as to the care and culture of the plants. To meet the want, the society published a pamphlet containing hints on the points involved, and a list of wild flowers of Massachusetts. Last Easter each gift of a potted plant was accompanied by a copy of the pamphlet. This was followed by the offer of premiums to be awarded by the society at a series of expositions in Boston, during the present summer and next autumn. The final exhibition is to be held in Horticultural Hall September 14. This movement of the society has resulted in brightening thousands of homes with growing plants, and awakening a refining love of flowers among the young.

A Great Show.—The annual fair of the New York State Agricultural Society, which is to be held at Albany Sept. 12th to 19th, promises to be peculiarly important and interesting. In addition to the usual features there will be some of special interest. Through the active co-operation of the New York Bee-keepers' Association a very large exhibit of the apiary will be assured. The State Dairymen's Association and Dairy Commissioner, J. K. Brown, will also aid in securing the largest display of butter, cheese and dairy goods generally ever made in the State.

Roller Gates.—Rev. W. T. Hill, Dakota, writes us a suggestion regarding sliding gates. He says: "Fix a roller under each end of the gate, and lay a common fence board on the ground between the parts, and the gate need not be carried, but may be rolled in opening and closing."

AMERICAN AGRICULTURIST
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The Immigration Problem.

Public opinion is rapidly coming to a head on the question of admitting to the United States the criminal and pauper classes of other countries. It is a subject that intimately affects the farmers and village people of the United States quite as much as city residents. As most of our permanent reforms are perfected only through the intelligent action of the whole community, of which our agriculturists form a majority, it is especially important that the farmers of the country make an earnest demand for the immediate regulation of this perplexing question.

No good citizen desires to exclude from the United States those from other lands who come here with an honest purpose, provided they are able and willing to take care of themselves and not become a charge upon the community. The class to be excluded are the criminals, anarchists, socialists, paupers and diseased and demented persons. On this point there seems to be general agreement, but the great difficulty is to devise some practicable means of extracting the wheat from the chaff, admitting desirable and excluding undesirable immigrants.

Nothing better has been suggested thus far than a modification of the passport system, but the idea should be carried still further than has yet been expressed. At each principal port of emigration in foreign lands, a fully equipped United States consulate should be established, with a sufficient force of clerks, experts and physicians to do the work proposed. When any person desires to emigrate to the United States, he should apply to the nearest consulate for a passport, accompanying the request with a certificate from the local authorities as to his character and record. A fee sufficiently large to pay the expenses of investigating the truth of the statements made in the application, should be required with it. In the case of dubious characters, a superficial examination to the extent of the usual fee would show whether further investigation was required to satisfy the consul as to the desirability of the applicant as an American citizen. In such cases the applicant should be required to advance such further sum as might be necessary to complete the examination of his record. The honest and well-intentioned emigrant would assist the United States authorities in every possible way in making the examination, so that the matter would be comparatively simple and the fee required within the means of all. The investigation by the consulate should include an examination by a resident American doctor, so as to protect our people from unnecessarily diseased immigrants. All proving satisfactory, a passport should be issued to the applicant, entitling him to land at any port of the United States under such restrictions as might be imposed. This passport should be retained by the emigrant and its production made necessary before he can secure naturalization papers or become a citizen.

This is the substance of a method the details of which could be worked out so as to thoroughly solve the problem. Moreover, the fees received from applicants should be sufficient to defray the expense incurred through these restrictive measures.

It will be at once objected that the fees will be more than the very poor but well-meaning immigrant can afford to pay. But if he is really a favorable subject and assists in the investigation, the expense need not be much. It certainly is due to the citizens who comprise our country at present that newcomers should at least pay the expense of the system which insures their welcome here. We do not go into the question of the taxation of immigrants nor discuss the length of time they should reside here, nor the extent of their education, before naturalization papers are issued to them. These are matters for still further deliberation, and upon which there is a variety of opinion. But there can be no question as to the desirability of some such system of inspection as the AMERICAN AGRICULTURIST suggests.

Reports on Crops.

The AMERICAN AGRICULTURIST notes with pleasure the renewed efforts of the United States Department of Agriculture to perfect its system of crop reporting. This work is among the most important labors of the Department, and worthy of its best efforts. The system at present employed comprises a chief correspondent in each county, with three or more assistants, who report on the first day of each month as to the area compared with the previous crop, the condition on the basis of full vitality and medium development, and the average yield per acre. A State agent of the Department also has a duplicate set of correspondents, whose work is intended to verify the reports of the county correspondents. The basis of comparison is the percentage, 100 being the unit. When the condition of the crop is said to be 100 it is held to mean that the crop has a normal growth and vitality unaffected by disasters or injuries from any cause, and having a full and uninjured stand with medium growth.

It is pointed out that there is quite as much difficulty in estimating acreages as in getting at the actual yield of crops. It is now proposed to verify these reports by the actual returns of individual farmers as to the area and product of various crops, on the basis that the record of one farm in ten in a given district will fairly represent the whole. This plan was once tried by the Department on the cotton crop, and the result came within 20,000 acres of the census returns, which placed the area of cotton at about 14,500,000 acres. It is now proposed to conduct this inquiry on a grand scale as applied to the area of all the principal crops. If the result is satisfactory, a similar trial will be made on the question of yield.

One failure of the Department heretofore has been its lack of reports on the many special crops which are grown more or less extensively in various parts of the country. Cigar leaf tobacco, rice, sugar cane, onions, cabbages, squashes, small fruits and many other minor crops, grown in small areas but aggregating a large amount, deserve to be attended to. The difficulty is to ascertain where such crops are grown, while there has been a lack of funds with which to extend the system of reporting in this direction. With the necessary means, however, it would not be difficult to conduct an inquiry that would bring out the facts necessary for an inquiry into the area, yield and prices of these special crops.

The United States Survey of the Arid Lands.

The attention of Congress has been attracted to the important problem of the reclamation of the arid lands of the West through the untiring efforts of Major Powell, Director of the United States Geological Survey. Two appropriations have been made for investigating the conditions in this region, and a Senate committee personally visits the ground with Major Powell this present summer.

The first appropriation was not made available until October, 1888, but a line of work was immediately planned, and the plans put in operation as speedily as possible. Two divisions were immediately organized, one topographical, the other hydrographic. Several corps of topographers were immediately sent into the field in Colorado, New Mexico and elsewhere, and their work was so speedily done that some excellent maps were finished in time for presentation at the next session of Congress. The plan of topographic work is still being followed, and parties are at work in the various States and Territories.

The Hydrographic branch of the Survey was placed under charge of Capt. O. E. Dutton of the Army, a man noted for his scientific ability and practical knowledge. About a dozen assistants were appointed, and early in December were located in a camp at Embudo, New Mexico, under charge of Mr. F. H. Newell, an engineer of experience and ability. The greater part of the winter was spent in camp, where a concerted plan of work was organized and all members were made thoroughly acquainted with every branch of the work. This was necessary, since the work is novel and requires a practical knowledge of many points which are not ordinarily taught in our engineering schools and colleges. Much practical field work was done in addition, including a study of the condition of irrigation in New Mexico, some elementary meteorological investigations and a hydraulic study of the principal streams of New Mexico.

As soon as spring opened the organization of the Survey was made more complete. The two leading irrigation engineers of the country, William H. Hall of California and E. S. Nettleton of Colorado, were appointed consulting engineers, and a number of Division engineers were placed in charge of the chief hydrographic basins of the Arid Lands. Two classes of work are being done at present, one a study of the conditions of irrigation, and the other a hydrographic study of the more important rivers.

The final outcome of this work cannot be foretold. It depends largely upon the action of Congress in the matter. Storage reservoirs may be built at public expense, or conditions may be created by which it will be possible for private parties to construct them.

THE CROP COMPETITION.

Returning the Compliment.—"The results of the prize crop competition will be very interesting, and the AMERICAN AGRICULTURIST will be worth all it costs for this information alone. I cannot refrain from continuing my subscription, and have showed your premium list to several neighbors, who I hope will become subscribers. I inclose a useful device, if you think it worth publishing. I have profited so largely from ideas taken from your columns and books, that I am glad to return the compliment when possible." Thus writes F. W. Godsal from Alberta, Canada. This is the spirit we so cordially welcome among our subscribers. It is pleasant to know that they appreciate what the AMERICAN AGRICULTURIST is trying to do for them, and we want them all to feel that its columns are always open to their suggestions, questions and communications.

Notice to Contestants.—In regard to the harvesting of crops on the contest acres, we desire to call special attention to Paragraph 37 on Page 30 of the book for reports. This paragraph is as follows: "Notify the AMERICAN AGRICULTURIST, 751 Broadway, New York, by postal card, letter or telegram (prepaid) the date at which you propose to harvest the crop, sending us this notice so that we can get it fully two weeks in advance of the date at which (weather and crop permitting) you propose to make the harvest. In the case of corn, the date of the 'harvest' is the day you pluck or gather the thoroughly-ripened ears from the stalks as still standing. (See Ques. 39.) We reserve the right to be present in person or by proxy at the harvesting, in addition to the three witnesses required by Rule 5. If, for any reason, the harvesting is postponed, we should also be notified."

QUESTIONS AND ANSWERS.

S. C. Bunstine, Christian Co., Ill.: The land must be surveyed by a practical surveyor. It is very important that the measurement be exact. The crop must be weighed in the presence of the witnesses, and they are to take the necessary precautions to test the scales or steelyards employed before the weighing is done, and see that the scales are accurate and that the weighing is correctly done. We shall have more to say on this subject in our next issue. Our friend also thinks that some truck-farmers, who have only an acre or two of land, will plant a kernel of corn in every square foot or two of ground and cultivate the entire crop with a hoe, and thus secure some advantage over farmers who plant two-and-a-half or three feet apart. There were no restrictions against the method of growing the crop; but you needn't fear—the competition of crops grown in the manner indicated as this would be altogether too close to admit the necessary sunshine to make the crop do its best.

J. E. Craig, Lancaster Co., S. C.: The book of reports says that the ears of corn obtained from the contest acre must be weighed at once in the presence of the witnesses. (See certificate on Page 33 of the book for reports). It is not essential that the crop should be weighed right on the field, but it must be weighed as it comes from the field, and before any part of it goes out of the sight of the witnesses, so that there will be no chance to add any other grain to it. For instance, you may pick a part of your corn crop and cart it to a higher piece of ground, away from any other corn, and there have it husked and weighed, if the witnesses will be so stationed as to see that only the corn from the contest acre is plucked and that no other corn is husked. If you fear that a rise of the creek will wash away your crop, you should employ more help, so that you can pluck, and husk it all and weigh it all in one day in the presence of the witnesses. See the answer to C. C. Ball.

R. H. B., Rockbridge Co., Va., writes: I am rejoicing to see that you have taken a step in the right direction by requiring at least one whole acre to be cultivated in the crop competition, and not one or two single rods, as is generally the case. I only wish you had gone further and stipulated that five or ten acres should be grown by each contestant, then there would be a stimulus to improve the whole farm. There should be no trouble in any farmer making one acre produce all that it will yield. I may add that on a part of a ten-acre field I have taken off four crops of corn and seven of wheat, or eleven crops in all, in thirteen years, and have given it no special fertilizer or care.

A. W. F., Hampshire Co., Mass.: The sworn certificate of three witnesses and the grower will be sufficient at the harvesting, and we do not require that the potato crop be preserved. We hope also to be present in person or by proxy at most of the harvestings. The only report required is to be made out in the book. The fertilizer prizes will be awarded from it by us. In case of any doubts about the fertilizer used or other manure applied with the fertilizer, we of course will make an investigation and require a statement. The entries are now closed. A subscription received as late as June, with ten cents added for the book, will entitle the party to contest, and the magazine can begin this time or with any back number desired. If an official surveyor lays off the land, only one witness need be present; but if others are present, give the names. All three witnesses must be present at the entire harvesting. Of course if you have one of the witnesses to weigh the loads of potatoes on the standard scales of a neighbor, while the other two witness the digging, that will be sufficient. The witnesses must be absolutely satisfied that not a pound of potatoes are taken outside of the limits of the exact acre.

J. E. Craig, Lancaster Co., S. C.: A careful perusal of the certificate of the corn crop, on Page 33 of the book for reports, will indicate how the crop is to be measured. The ears are to be left standing on the stalks until ready to pluck. They are then to be plucked in the presence of the witnesses. It is not necessary that the whole crop be plucked in one day, but no more should be plucked in one day than can be husked and weighed on the ear in the presence of the witnesses the same day. The next day another part of the crop can be plucked, husked and weighed on the ear in the presence of the witnesses, and so on, until the whole acre is harvested. It will be seen that by this method there will be no chance of fraud or deception, whereas if it were permitted to pluck the entire crop one day and husk it the next, we should have very little protection against the addition of other ears. The witnesses will guard against this by seeing that so much of the crop as is plucked each day is assorted, and the weight of the immature, soft and unmerchantable ears is taken, as well as the total weight of the ears of corn. If it takes more than one day to complete the harvesting, of course the weights of each day's work will be added together to give the total of the crop. Each witness is to select from different parts of the field at the time of plucking an average lot of ears, weigh out 100 pounds of each lot, shell it, and report the number of pounds of cobs and of kernels that each witness obtained from his lot, in the blank for this purpose in the corn crop certificate, in the book for reports. The ears should be selected by each witness from different parts of the field, so that the whole will fairly represent the crop. As the corn-crop certificate gives the total weight of ears of corn taken from the exact acre, and as by the tests of the witnesses, we shall know the average weight of kernels in each hundred weight of the crop, the yield in shelled corn can be readily calculated. And this is to be confirmed and corrected by the analyses of the fifty-pound sample sent to the State Experiment Station. If contestants and witnesses will carefully read the directions for harvesting the corn crop, and fill out the corn crop certificate fairly and honestly, we shall see to it that the calculation is accurately carried out. Our rules call for the weighing of the entire crop as husked on the ear, and the shelling by the witnesses independently of each other of one hundred pounds of the ears. Of course it would be impracticable to shell the entire crop at the time of plucking and husking, however dry the season, while to permit the ears to be put in a crib and the entire crop shelled after curing, would open wide the door to deception, which these tests by the witnesses will guard against.

J. A. A., Summit Co., Utah, fears that in his high altitude, 5,000 feet above the sea, he will not be able to send in his report of the oat harvest to reach us by Oct. 1, as that is just the time that the crop is cut, and sometimes it is harvested even later. He asks if we can give the same date as for wheat. Owing to the immense amount of work involved in going through these reports, we called for the report on oats Oct. 1, wheat Oct. 25, potatoes Nov. 15, and corn Dec. 10, as per Rule 8 in the book for reports. We hereby give notice that any contestants who fear they will be unable to send in their reports by the dates named, because of the lateness of the season, etc., should notify us not later than eighteen days before the date stated for each crop, giving the reasons why they think their report will not be ready on time, and stating how soon it can be ready. We shall then decide each case on its merits, but in every instance shall hold that the reports must be in by the dates stated, if possible. Very little delay will be permitted, if any. In no case will any delay be permitted, that could in any way, shape or manner give any advantage.

W. B. Woodruff, Larimer Co., Colo.: 1. You cannot add to the measured acre the width of an irrigating ditch, or for the space occupied with rocks or other obstructions. If this were permitted in one case, it would have to be permitted in all cases, and would open wide the door for many confusing claims, to say the least. 2. The actual yield when harvested is what will be counted. If your contest acre is injured by drought, water or other purposes, you should still put in your report of what you do get, because, if it doesn't secure one of the larger prizes, it may secure one of the smaller ones; or, failing to secure a prize, your report certainly will add greatly to the information the competition will draw out. We cannot allow for the portion injured or destroyed, even if what remained was proportionately the largest or best yield to the acre.

J. O. Darby, Chester Co., S. C.: The dimensions of the contest acre, whether three-cornered or five-cornered, are not restricted, so long as they do not exceed 43,560 square feet, or one square acre. It is not allowable to leave from three to ten feet all around the border of the acre, and richly manure and thoroughly cultivate this space, with the intention of having the roots of the two outside rows on the measured acre stretch out into this space, and thus steal food outside of the exact acre. It will be noted that Rule 3 on Page 7 of the book for reports covers this matter exactly. It says, "The outside row or limit of the crop must not come beyond the limit of the actual acre. In the case of corn or potatoes, the last or outside row must not be exactly on the outside line, but sufficiently inside of it to have the plants above ground stand wholly within the limits of the acre." The witnesses must see that this rule is thoroughly enforced, and corn or potatoes planted nearer than within one foot of the outside limits of the acre will hardly stand wholly within those limits and will therefore be excluded.

Your book for the reports in the prize crop competition is gotten up in admirable form. It certainly required much labor. I don't expect to win the prize, but like to see fair play and have every loophole closed against fraud and deception. S. C. BUNSTINE, Christian Co., Ill.

C. C. Ball, Keokuk Co., Ia.: Read carefully Pages 30 to 35 of the book for reports, and note the further explanations given to J. E. Craig, in this issue. It is not essential that the plucking and husking of the entire acre be done in one day, but it is essential that so much of the acre as is plucked must be husked and weighed that day, all in the presence of the witnesses, and the job completed the next day or the day after, in the presence of the witnesses, as explained to Mr. Craig. It is essential that the fifty-pound sample of corn, as described in Question 39 in the book for reports, be put up by the witnesses for shipment to the State Experiment Station on the day of the harvest. But if it is inconvenient to deliver it at the express-office that day, it can be shipped at the earliest practicable moment,—say within two or three days. The essential point in taking this sample is that it shall be fairly selected, and that it weigh exactly fifty pounds on the ear, when put up on the day of harvest. If it has to wait a day or two, and dries out some, or absorbs moisture before it gets to the Experiment Station, it will make no difference to the chemist, as the exact weight of the sample when harvested was fifty pounds. Contestants should be careful that the sample prepared for shipment on the day of the harvest is just fifty pounds of corn on the ear, no more and no less, as this definite quantity is essential for the exactness required in the analyses and investigations by the Experiment Stations. It will be no particular trouble to put up this fifty-pound sample, and we hope and believe that the results of the investigations by the Experiment Stations will be one of the most important works ever done for practical farmers and scientific investigation.

Matters of Business.

A Salary with expenses paid will come handy to any one who is now out of employment, especially where no previous experience is required to get the position. If you want a position, see advertisement on Page 418, "A Chance to Make Money."

The Great Cleanser.—Pyle's Pearline is a favorite article in every house it has ever entered. It lessens the labor of housekeeping, and promotes purity and cleanliness. The very word "Pearline" sounds clean and sweet enough to recommend even a poorer article. But Pearline does as clean and sweet work as its name implies.

A Great Offer.—The French Achromatic telescope, elsewhere advertised in connection with the AMERICAN AGRICULTURIST, is a thoroughly reliable instrument in every way. It is not only indorsed by scientific experts, but farmers and those who have used it are loud in its praises. Send $3 to the AMERICAN AGRICULTURIST and the magazine will be sent for one year, together with one of these superb telescopes

American Machinery in Paris.—Reports from the great Exposition at Paris, France, mention as among the notable features of the American section the display made by the Whitman Agricultural Company of St. Louis, Mo. It includes the famous Whitman hay presses, together with horse powers and various other implements manufactured by the company. The display at Paris is likely to make the Whitman implements as famous in the Old World as they are already in this country.

The Improved Monarch Incubator.—This is a simple self-regulating hatcher, which is warranted to bring out seventy-five per cent of fertile eggs, and in actual practice hatches out a still larger proportion. It is manufactured by A. F. Williams, Bristol, Connecticut, who also makes very excellent brooders. He has recently issued a very useful little pamphlet on "Management, Hatching and Raising Chicks in Incubators and Brooders," which is sold at 15 cents, and should be possessed by every one interested in poultry-raising.

A Revolution in Sugar-Making.—The Champion Evaporators, manufactured by the G. H. Grimm Mfg. Co., of Hudson, Ohio, have caused a complete revolution in the process of maple sugar making. They produce a superior article at half the cost and labor of the old method. The Champion Evaporator is also peculiarly adapted to the manufacture of sorghum molasses, and as an evaporator for cider and fruit jellies is unexcelled. Every person who has occasion to use an evaporator should send at once to the G. H. Grimm Mfg. Co. for their descriptive catalogue.

Hydraulic Machinery.—The forty-sixth edition of Rumsey & Co., Seneca Falls, N. Y., is an elegant octavo of 76 pages, profusely illustrated, and a fitting exponent of the largest establishment in the world for the manufacture of hydraulic machinery. The list includes pumps of all patterns for hand or power, hydraulic rams, fire engines and other apparatus for fire departments, etc. Everyone who is studying the best methods for increasing the water supply of the farm, and village authorities who contemplate enlargements of fire departments should each obtain a copy of this handsome catalogue.

Silos and Silage.—The farmer or dairyman who fails to provide for a supply of silage, and depends instead upon dry fodder, places himself at a great disadvantage. The economy of the silo has ceased to be an open question, and the only one remaining is how best to build and fill it. The Smalley Manufacturing Company of Manitowoc, Wis., manufacture very excellent fodder and silage cutters, with straight and angle delivery carriers, which work in the most perfect and satisfactory manner. Every farmer who has a silo to fill will do well to send for the catalogue of the company as above.

The Ross Cutter and Carrier.—To fill a silo quickly and well requires a good cutter to reduce the coarse material to the proper length, and convey it into the silo without handling. The Ross Cutter and Carrier, made by E. M. Ross & Co., Springfield, Ohio, is admirably well adapted to the purpose, cutting equally well corn, clover, rye, Hungarian grass, millet, pea-vines, sorghum, and all other forage crops. They possess many points of peculiar value, which secure ease of working, durability and convenience. Besides these machines, Messrs. Ross & Co. make a large variety of agricultural machines, all of the best design and construction.

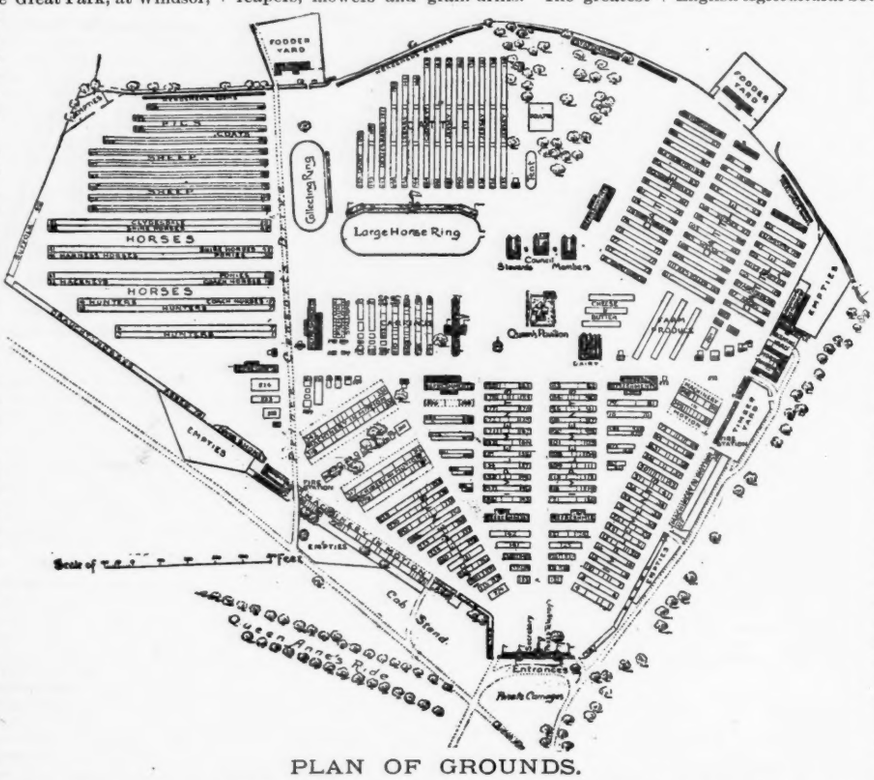
Pure Teas and Coffees.—The Great American Tea Company, 31 and 33 Vesey street, New York, has stood pre eminent for a generation, and its teas and coffees are celebrated all over the country for their purity, strength and drawing qualities. It was the originator of the system of selling to clubs, which has proved such a convenience to those who live remote from any of its agencies. By this means the largest tea-house on the continent is practically brought to the door of every farm-house. The company sends free on application a price-list, which contains full particulars for getting up clubs, and every tea-drinker will do well to send for a copy.

The Racine Bolster-Spring.—Every one who has experienced the misery of using a springless farm wagon for hauling fruit, milk, or other produce, will know how to value the Racine Patent Wagon Bolster-Spring, made by the Racine Bolster-Spring Co., Racine, Wis. The device consists of a series of springs, firmly attached to an oak bar upon which the wagon-box rests, the springs resting upon the bolster. They have all the advantages of elliptic springs, with only a fraction of the expense, and the additional advantage of greater strength. They are easily applied to any wagon, can be used under hay or wood-rack, need no fastening, raise the wagon-box but four inches, and are warranted.

The Royal Show at Windsor.

LONDON, July 2, 1889.

The fiftieth annual show of the Royal Agricultural Society, at Windsor, which closed last Saturday, was the grandest exposition of agricultural progress ever held in Great Britain. All the circumstances contributed to make it such. It was the jubilee show of the Society of which Her Majesty the Queen is the President and his Royal Highness the Prince of Wales is the Acting President. It was held in the Great Park, at Windsor, almost in the shadow of the grand castle which has long been the chosen home of the British sovereign. The state apartments were thrown open to the public, and visitors to the show were thus allowed also to inspect the treasures of royalty. The weather was uncommonly favorable, and no incident was wanting for the triumphant success of the show. The show-yard comprised about one hundred and twenty-five acres inclosed in a fence, and laid out as shown in the accompanying plan [figure 1]. The avenues spread out in fan-shape from the central group of buildings, of which the principal one was the Queen's pavilion [figure 2]. This beautiful edifice had a frontage of sixty-four feet, and a depth of fifty-four feet. It was in the late Tudor style of architecture; the interior decorations were rich and appropriate, and the whole was a center of attraction. The entrance to the show-yard [figure 3] and all the structures on the grounds were in excellent good taste. The shedding for live stock, implements, machinery and other purposes, measured 50,079 lineal feet, and as most of it was furnished with a double front, there were nearly twenty miles of frontage.



PLAN OF GROUNDS.

The show of stock and implements was fully worthy of the occasion. Of stock the number of entries was as follows: Horses, 972; asses, 17; cattle, 1,637; sheep, 1,069; goats, 37; pigs, 265; poultry, 862. As nearly every one of the entries included several animals, the total number was over 15,000. In some of the classes the show was the largest and finest ever seen in England. This was notably true of many classes of cattle.

But the great improvements which mark the last fifty years were most emphatically shown in the departments of implements and machinery. It is mechanical invention, rather than the improvements of herds and flocks that has advanced British agriculture so greatly during the half century, and of this fact the Royal show was in every way a worthy exposition. In extent and variety the display was truly bewildering. Machinery and implements, from the ponderous road-engines, steam-plows, threshers, grinding-mills, hay- and straw-presses, and other steam-driven devices; plows, harrows, reapers and other machines operated by horses, to the most delicate appliances for the dairy, were in full force. Among them were many of American origin, especially chilled plows, reapers, mowers and grain-drills. The greatest novelty was the Strawsonizer, which is virtually an improved broadcast distributor by pneumatic power. It distributes either solids in the form of fine dust, or liquids in a minute spray or mist. It is used for spreading artificial fertilizers or insecticides in liquid or solid form, upon fruit trees, shrubs or vegetables, disinfectants in solution, etc. It was shown in various sizes for horse- or hand-power.

Of farm and dairy produce there were 4,203 entries, embracing products of the field, the dairy, the orchard, and the apiary. In hives and honey there were 276 entries in 22 classes. A notable feature of the show was the model dairy in which lectures and demonstrations of butter- and cheese-making, apiary management, etc., were given from time to time during the week. There were also competitive exhibitions of horse-shoeing.

Of agricultural, vegetable and flower-seeds, there was an imposing show. The beautiful decorations of the grounds around the Queen's pavilion were furnished gratuitously by one firm of seedsmen, and all showed commendable enterprise not only in the extremely tasteful manner in which they displayed their seeds, but also by attractive shows of fully-grown, fresh vegetables, mounted specimens of dried-grasses and forage-plants, and other features which gave this department high value as a popular educator. The show was in every way a marvelous success.

Among the thousands of spectators were a few veterans who could remember the first show. It was held at Oxford in 1839, the year before the royal charter was obtained; it was then known as the English Agricultural Society; £890 were offered for competition, and 251 head of stock were exhibited, with 54 articles of husbandry, displayed on 32 stands. A banquet was served in the quadrangle of Worcester College, at which Daniel Webster, the Minister from the United States, was one of the orators. The royal charter incorporating the Society under its present name was obtained in 1840. The contrast between the diminutive dimensions of that first show and the magnitude of the Jubilee Show just closed, was a most impressive indication of the agricultural progress which has marked the reign of our present gracious sovereign. The numerous Americans who have been enthusiastic over the great show, are struck with admiration when they reflect that it is an exhibit of the "depressed agriculture" of a nation with so limited an area. It is doubtless true that our methods of farming are more cumbersome than yours in America, but where do you grow better crops than we have in good old England? And with all due regard for American genius, it will be many a year before the United States will have an exhibit to equal this fiftieth Royal Show.

AGRICOLA.

ENTRANCE TO GROUNDS.

QUEEN'S PAVILION.

Venus' Flower Basket.

One would surely not think it from the name, but Venus' flower basket is a sponge. And to look at it, one would not think it either a basket or a sponge. In shape something like the horn of a gnat—only much larger—of a brilliant, gleaming white; hollow, of an open-work resembling a pattern of finest lace, and looking as fragile as a cobweb, yet it is in reality as firm and strong as coral. Looking at it closely, one is inclined to doubt that this charming bit of lace-work can be a sponge, yet the delicate tracery of the Venus' flower basket is but the skeleton of a species of the very humble animal called sponge. It is found growing at the bottom of the West Indian and some other tropical seas.

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Every size Scale. For free price list mention this paper and address
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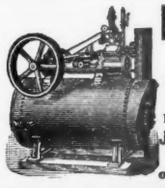

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IXL 2-HOLE Corn Sheller

Adapted to run by hand, horse, steam or wind power. Not cheaply made but strong, durable and effective in its working yet light running. It is constructed similar to the large Power Shellers and is the best 2 Hole Sheller on the market.

HORSE POWERS

and JACKS, both single and double Geared, made heavy and strong.

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made in 5 Sizes, with Safety Fly-Wheel, Safety Lever, and all late improvements.

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NEW-YORK STATE FAIR

ALBANY, SEPTEMBER 13 TO 19, 1889.
Entries Close August 13.
For Prize List and new features, address
N. Y. S. Agricultural Society, Albany, N. Y.

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Warranted Best Truss made, to CURE all Curable cases or Refund Money. Only Genuine Electric Truss in World. Perfect Retainer. Gives instant relief, speedy cure Ease and Comfort day and night. This New Invention combines science, durability and power. Price $3 & $5. Illus. pamphlet free.
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Over 13 Inches Long. By Cargo or Smallest Quantity. Price List on Application. Prices that cannot be undersold. Our new improved Machinery makes a Superior Round Tile, excelling anything offered before and at greatly reduced prices; also Vitrified Glazed Pipe. First premium wherever exhibited. Drain Tile Machines for sale.

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ODORLESS PHOSPHATE,

The **Best** and **Cheapest** Fertilizer in the market. Warranted **20 per cent. available phosphoric acid.** Makes the crops to grow as they never grew before. Ask your grocer for it, or order direct from the
POTTSTOWN IRON CO., Pottstown, Pa.

FARMING IN FOREIGN LANDS.

A herd consisting of ninety-two heifers and six bulls, selected from the choicest Aberdeen-Angus herds of Scotland, was recently shipped from Glasgow for the Quorn ranch, Calgary, in the Canadian Northwest.

The Department of the Interior at Ottawa has intimated that, in accordance with clause 46 of the Dominion Lands Act, the privilege of pre-emption in connection with a homestead entry will be discontinued from and after January 1st, 1890.

Irrigation is conducted on a large scale in Japan, and dates from long before the Christian era. The irrigation works are massive and costly, and from a distance look like double-track railways. These are the large reservoirs and main ditches, besides which mountain streams are utilized in the usual manner.

Bedfordshire is one of the great market gardens tributary to London. The center of the business is Biggleswade, 41 miles from London, from which the railway charges, including the delivery in the markets, are three dollars per ton for two-ton lots or more. Potatoes, carrots, turnips, cabbage and winter greens are grown.

The English sparrow is proving a great nuisance in various parts of Victoria and other Australasian provinces. This pestiferous bird is placed outside the pale of the law's protection in many of our American States, and deserves to be exterminated in all countries where it multiplies as rapidly as it does in America or Australia.

Olive oil is being so extensively adulterated with cottonseed oil that the olive industry in the south of France is being fast destroyed. The French government is anxious to stop this adulteration, the extent of which may be inferred from the fact that two million gallons of cottonseed oil are annually shipped from the United States to Marseilles.

It would not seem that sheep or sheep's products would ever be taken to Scotland, that country famous in history and modern times as the home of the sheep, but a cargo of 20,000 carcasses of frozen mutton has been received in Glasgow from the valley of the Plate river. This is the first importation from the Argentine Republic, and the meat arrived in the very best condition.

A liberal prize for preserved eggs was recently awarded in England. The eggs were delivered at Bingley Hall, August 1st, and were opened November 1st. The prize was awarded to one dozen infertile eggs packed and well kept in flour. Other eggs had been packed in the common mixtures of lime and water, salt and lime, bran and sawdust, and some had been well rubbed over with beef and mutton suet melted together.

The evil of depopulation of country places is assuming threatening proportions in the French Republic. In 1861 the agricultural population was 19,873,493. At the census of 1881 it had fallen to 18,249,209—a decrease of 1,624,284 in twenty years. As regards the rural population of the southwest of France, which lost five per 1000 per annum, in the period from 1861 to 1872, M. Guiraud affirms the present rate of decline to be double what it was then.

The codlin moth is creating great havoc in Australian orchards, but the simple and effective American remedy of spraying the trees with a solution of one pound of Paris Green or of London Purple in one hundred gallons of water when the apples are no larger than peas, seems to be comparatively unknown. The laborious method of picking the grubs and cocoons and destroying them is the one most recommended in the provincial press.

Some idea of the enormous extent of undeveloped area in the Argentine Republic may be inferred from a recent government report on the agriculture of the province of Santa Fe. Its area is nearly 25,000,000 acres, but 1,500,000 acres are under cultivation, and these are owned by 18,000 individuals, of whom half are immigrants from abroad. The total population is 220,000, and the province contains 2,500,000 head of cattle, 500,000 horses and mules and about 3,000,000 sheep.

The great seed-house of Vilmorin, Andrieux & Co., of Paris, seedsmen of world-wide reputation, and who have conducted large experiment farms on their own account, are specially interested in similar work in this country. They have for several years furnished samples of their collections of new seeds from all parts of the world free to such of our institutions as applied for them, and we learned in a recent call upon them that they are willing to do the same for stations that have not yet applied to them.

The standard English remedy for tape worms in lambs is to give each animal on an empty stomach —that is, after it has had no food for twelve hours —a drench consisting of an ounce of turpentine, a dram of powdered areca nut, three ounces of linseed oil, half a dram of liquid extract of malt fern, and a teacupful of water. The lambs are also given a dram of common salt and one scruple of sulphate of iron daily with their food, per head. Pastures infested with tape worms are dressed with salt or gas lime in the spring and autumn.

The sheep in the Cape of Good Hope have been much infested with large tape worms and small red worms (*Strongylus rufescens*). The free feeding of common salt, four parts to one of finely-powdered slaked lime, is proving quite a satisfactory means of eradicating the worms. A little flour of sulphur and finely-powdered sulphate of iron is added to the mixture with great benefit in severe cases. When an animal is thoroughly infested a solution of a small spoonful of powdered bluestone in a quart of water is recommended, a wine-glassful being given on an empty stomach to each sheep.

The rabbit commission appointed by the government of New South Wales, and containing representatives of all the Australasian colonies except New Zealand, has had submitted to it 116 schemes for the destruction of rabbits by means of disease, and 1400 schemes for the use of other means—a number not astonishing when it is remembered that the sum of $125,000 was to be the reward of success. But the decision of the commission is that none of these is better or even so good as rabbit-proof fences, combined with the already well-known methods of slaying. Compulsory fencing on crown or alienated lands, with netting three feet high and a mesh of one and five-eighths inches, is the essence of the report, the remaining recommendations dealing only with questions of state policy. The result is a bitter disappointment to the many who hoped for a feasible remedy.

An agricultural school has been established by the government at Stellenbosch, Cape Colony, South Africa. Superior inducements are offered to encourage farmers to send their sons to the new institution, which will give attention to the theory and practice of the various branches of agriculture peculiar to that colony. The government viticulturist, tobacco expert and veterinary surgeon will be stationed at this school periodically, and an experiment station will be operated in connection with it. Students' board costs about $4 a week, everything included. The same colony supports quite an effective department of agriculture, under whose auspices a large number of improved stallions have been introduced and stationed at different points so as to be available to all farmers who desire to improve their stock of horses; a service fee of $10 is charged.

Tea planting has been wonderfully successful in Western Dooars on the frontier of Bhutass, India. The district has been open since 1875. In 1886 there were only 25,000 acres under tea, operated by 54 companies, which have paid dividends of from 20 to 30 per cent. The great advantage which the district enjoys is the free labor which flocks to it—coolies who work cheap and require no contract to stay a certain number of years, as is the case in Assam, the tea gardens in which pay only from 10 to 16 per cent annual dividends. One company that started in in 1877 was practically a failure until in 1883 they made a small profit under a new management. The next two years 40 per cent dividends were declared, 28 per cent in 1886, and 30 per cent in 1888, and in addition a large surplus fund has been built up. The stock of this company is now quoted at 220, it having paid 110 per cent dividends in four years.

English agriculture is experiencing great changes. The last official returns show that the cultivated area has increased about half a million acres in the past decade, being in 1888 about 48,000,000 acres. There has been a large falling off in the acreage of wheat, barley, beans and peas, and a considerable increase in oats, rye, permanent pasture and dairy cattle. The sheep interest has seriously declined, about 30,000,000 sheep being returned in 1888, or 3,500,000 less than were kept ten years ago. This decline was due mostly to the disastrous losses from fluke in 1879 and 1880. Since the latter year, there has been an increase of 1,500,000 head. There have been great strides in the economical management and improvement of dairy stock. It is believed that the average yield is fully forty gallons per cow more than in 1878, which at twelve cents per gallon means a total increase of $17,500,000 or about $5 per cow.

New South Wales fruit growers are thoroughly aroused over the phylloxera pest in their vineyards. At their conference in Sydney it was pointed out that while the pest was at present confined to a well-defined area, the only remedy was absolute destruction of infested vineyards and treatment of the ground with chemicals. It was voted to ask the government to amend the vine diseases acts to apply to all noxious insects and trees and plants, and not to the phylloxera and grapevine only. The board empowered to enforce the law was severely criticised, and the government is asked to give it power to apply remedies only when a disease or pest first makes its appearance in a limited area, and to provide for additional compensation when a vineyard or orchard is destroyed at the time the fruit is nearly ready to be gathered. Uniform packages, light and cheap, to be sold with the fruit, were earnestly recommended but not indorsed, while efforts were put on foot to reform the fruit nomenclature of the colony.

A great discussion has been stirred up in England over the merits of rye grass for permanent pasture. Both Messrs. De Laune and Carruthers denounce rye grass as worthless as a basis for permanent pasture. This opinion is not acceded to by many practical men, who point out that while there are some sixty different forms of rye grass they can be reduced to practically three—the perennial, annual or common, and the Italian. The first is awnless, the annual has a longer and broader seed, and the Italian has long awns. The true perennial rye grass, *Lolium perenne feyceanum*, weighs twenty-six to thirty pounds per bushel of seed, is strictly perennial, and of thicker growth than the annual variety, the leaves being narrower. J. H. Millard reports having seen it in fifteen-year-old pastures as strong and vigorous as it was at three years. He says: "The true perennial rye grass forms from fifteen to seventy-five per cent of the best meadows in England, including some that have been laid down over two hundred years. It is a rapid grower, and is also a bottom grass, the foliage hanging close to the ground and tending to choke out weeds."

Catalogues Received.

ELLWANGER & BARRY, Rochester, N. Y.: Descriptive, priced catalogue of strawberries, embracing the best old and new varieties, together with practical directions for culture.

PETER HENDERSON, 35-37 Cortland St., New York: Summer catalogue of strawberries; celery, cabbage, cauliflower and other vegetable plants, also price list for vegetable seeds for summer and fall sowing. Lawn-mowers and other implements. Durand's Nectar strawberry is now offered for the first time.

KEYSTONE MFG. CO., Sterling, Ill.: Descriptive and illustrated catalogue of the Keystone corn-husker and fodder-cutter, describing the construction and many uses of these excellent labor-saving implements.

PECOS IRRIGATION INVESTMENT CO.: Circular descriptive of the Rio Pecos water supply, irrigation canals, topographical features and the advantages which this region offers to the farmer and gardener.

PRACTICAL QUESTIONS ANSWERED.—A pamphlet with the above title has been issued by the Mapes Formula and Peruvian Guano Co., of New York. Among the questions answered are the following: "How can I go to work and get my farm into good meadow, using as little stable manure as possible? 'Phosphates' fail to do it." "How can fertility of meadows be restored and maintained?" "How can worn-out lands be restored with profit?" The answers to these and other questions are by practical farmers and eminent writers, who speak from years of successful experience with the Mapes complete manures. The pamphlet is sent free on application.

SMALLEY MFG. CO., Manitowoc, Wis.: A pamphlet explaining why it pays to use the ensilage- and fodder-cutters manufactured by this company; also, a complete report of the proceedings of the recent ensilage meeting at Cleveland, Ohio. A large number of testimonials from all parts of the country attest the value of these machines.

SMITHS, POWELL & LAMB, Syracuse, N. Y. Catalogue of Clydesdale Percheron, French Coach, American-Bred Coach, and Standard-Bred Trotting Horses, at Lakeside Stock Farm. In addition to the Holstein-Friesian cattle and nursery stock for which the Lakeside Farm is justly famed, the stock of horses is very extensive and of high quality.

WILSON BROS., Easton, Pa.: A large, handsomely gotten up and attractive "poster" illustrating the working of the celebrated Wilson Grinding Mills. The old way and the new way are completely illustrated with a considerable touch of humor in them.

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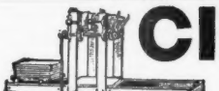

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Answers and Comment.

Breeds of Dogs.—T. E. Corbin, P. Q., Canada: The Great Dane belongs to quite a distinct breed of dogs from the German Tiger Mastiff. The former is a very ancient race—so old that authorities differ as to its origin—while the latter is a comparatively recent creation of German dog fanciers.

Grass for Name.—J. H. Hoerner, Franklin Co., Pa.: The grass inclosed is Quack (*Agropyrum repens*), one of the most troublesome and persistent pests of cultivated ground. It spreads by means of its creeping under-ground stems, each joint of which strikes root and becomes a new plant if broken off. If cut when first coming into bloom, it makes very fair hay.

The American Seed-Trade Association.—The seventh annual meeting of the above association was held in the parlors of the "Arlington," Washington, D. C., June 11 to 14 inclusive, a large proportion of the members being present. There was but little other than routine business transacted. The following officers were elected for the coming year: H. W. Johnson, President; J. C. Vaughan, 1st Vice-President; Albert R. Niles, 2d Vice-President; Rice McCullough, Secretary and Treasurer.

Hay-Making Implements.—Walter Clark, Wake Co., N. C.: Improved implements have revolutionized hay-making. The first machine to use is of course a mower, of which there are many excellent patterns in the market, all of them infinitely better than the best of twenty-five or thirty years ago. For very heavy crops the tedder is useful, especially if it is desired to hasten the curing of the mown grass. The horse-rake comes next, and of this implement there are many first-class kinds. The hay-loader is one of the latest and most useful labor-savers. It is a light machine which can be attached in a moment to the hind end of any wagon, where it picks up the hay from the windrow or even a heavy swath, and deposits it on the wagon. A full load for two horses is thus loaded in ten to fifteen minutes, with no heavy labor of pitching. The hay is unloaded and deposited in the barn or on the stack by means of a horse fork and carrier, which not only saves muscular labor, but time. When the hay is to be baled, one of the many excellent hay presses and balers is employed.

The Clydesdale Horse Society of Great Britain makes a very encouraging twelfth annual report. It has 1,164 members, a gain of about 100 in the year, as against 406 members in 1880. There is in the treasury over $8,000, after paying the expenses for the year of over $7,000. The eleventh volume of the stud book, about to be issued, is the largest yet compiled. The club has done much to increase the foreign demand for pedigreed Clydesdales, and prices were never before so high. Co-operating with similar societies, a successful effort was made to secure reduced freight rates on stallions and brood mares during breeding season, an important concession that our American breeders' societies should obtain. The society granted 1,149 certificates for exported horses, of which 556 went to the United States, 371 to Canada, 155 to South America (chiefly the Argentine Republic), 61 to Germany, three to Belgium, two to Russia, and one to Holland. It also publishes in June, July and August a register of Clydesdales for sale, which is largely circulated in the United States and Canada and leads to many sales. Archibald M'Neilage, Glasgow, is the secretary.

American Veterinary College.—We have received the 15th announcement of the American Veterinary College, and we take pleasure in calling the attention of our readers to that institution, which from the moment of its foundation has kept an onward march to progress and usefulness. The AMERICAN AGRICULTURIST has always recognized the good work done by this college, knowing how much it has benefited farmers and owners of live stock. The chief surgeon of the hospital informs us that over three thousand patients have been shown last year to the students, and that over thirty-two thousand animals have been prescribed for, attended and operated upon during the last fourteen years, facts which readily justify the claim of the American Veterinary College for having better clinical opportunities than any other veterinary school in the country. The requirements for graduation are two years of full attendance, and the applications for admission are largely increasing with each session. The American Veterinary College is doing good work, the officers deserve well for their success, and the Alumni can feel proud of their alma mater for having so successfully founded a nucleus for a truly American Veterinary profession. Circulars for the coming session, which opens in October, can be obtained from the Dean, *Dr. A. Liautard*, 139 and 141 West 54th St., New York.

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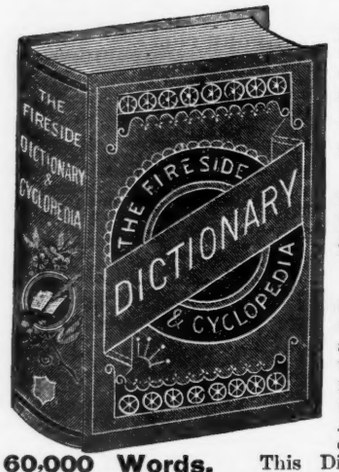

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Frederick County, Maryland, has been visited—and bled—by an enterprising individual who claimed to be the agent of a live-stock insurance company. He made a very active canvass of the county, pretending to take "risks" on horses and cattle, at the rate of two per cent a year premium. After he had driven a pretty extensive business in collecting premiums, there arose an anxious feeling about the promised policies, which failed to come. The agent smoothed it over with plausible representations, and kept right on collecting "premiums" from the unwary. At length the patience of the farmers was exhausted, and a thorough investigation was instituted. About this time the "agent" became invisible, leaving behind a large number of robbed and deluded victims, but no policies or evidence of any kind that he represented anything but himself.

The "Resurrection Rose."

It is not the "Rose of Jericho," which is a plant of the mustard family, nor the Mexican "Resurrection Plant," which is a species of club-moss. This later-discovered vegetable wonder is a veritable rose, "found in the spicy folds of the inner cincture of an Egyptian mummy." The withered flower, we are further told, was taken from the breast of the princess, where it had lain for more than two thousand years; its stem was placed by a tourist in a jar of water. "The poetical tourist drowsed away for a few minutes longer and rose to go from the moonlit realm of the Pharaohs to a prosaic Cairene bed, when his eye fell on the water jar. Supported by the top rim of the neck of the porrone, the stem dangling down in the cool liquid beneath, bloomed a strange, star-like flower, not unlike an aster in general appearance. Its fibers still quivered with nascent life. A moment more and its petals bent backward still further and displayed a glowing, irridescent heart of unknown and striking hues and bewildering pattern." We quote from one of the "great dailies" of New York, which publishes half a column of the rubbish. Our advice to any of our readers who may be tempted to invest in the "Resurrection Rose" is—don't.

"Local Agencies."

The woods are full of plausible, smooth-tongued swindlers, who victimize farmers by the "local agency" racket. The fellow has with him a pump, hay-fork, or other device of genuine merit. With this he goes to a substantial farmer, and after showing its workings, solicits the farmer to take the local agency for its sale, offering a liberal commission. Everything looks fair, and the unsuspecting farmer does not hesitate to sign what he supposes to be an order for a dozen or so of the articles he is to sell. In due time this paper turns up as a promissory note for the full retail price of the articles, which he has to pay. Even if he succeeds in selling the articles at full price he has no evidence which will enable him to claim the promised commission. But in most cases he fails to make sales, and has left on his hands, or lying around his barn, a quantity of pumps, hay-forks, fanning-mills, or other stuff, for which he has paid the full retail price. It seldom "pays" a farmer to attempt such an agency, even if it is conducted honestly and in good faith. But if he wants to try it he should read every paper carefully before signing it.

Pointers.

G. D. Clifford, Lake Co., Florida, and E. P. Earle, Anderson Co., South Carolina, forward to us circulars which they received from a "green-goods" swindler. They will be glad to learn that the fellow has been captured, despite his slippery tricks, and is now awaiting trial. There is only one of him, though he used so many aliases, and such a number of post-office addresses, that he reminds one of the patriot who proposed to organize himself into a regiment, and elect himself colonel of it. During the past six months our subscribers have kept constantly forwarding to us circulars from this fellow, signed by some of his numerous names and addresses, and we have turned them over to the detectives. The satisfaction of knowing that he is at last in custody will be shared by every one who has aided us in the work by forwarding the circulars to this office.

The truth of the adage "All is not gold that glitters" is illustrated by a recent swindling sale of a so-called "gold brick" to a man named Coombs in California. It was a bright, shining, heavy brick, yielding, when bored into, yellow dust, which under the closest inspection proved to be pure gold. Its weight indicated a value of $8,000, which price was paid for it in greenbacks, by an unsuspecting victim. But, alas, when assayed the brick was of brass, gilded over on the outside and plugged with pure gold in places where the test borings were to be made. It was the second one sold by the same swindlers.

The frauds on farmers in Ontario form the subject of Bulletin 26 from the Bureau of Industries at Toronto. With the exception of the notorious seed wheat and oat swindles, there has been a marked falling off in the number of frauds practiced of late. The patent right humbug is still at work and the local agent racket has taken in a number of farmers. Fraudulent transactions with churns, washing machines, pumps, barbed wire, lightning rods, roofing paint, fruit trees, etc., are also reported.

Scientific Farming.

The first circular has been published from the Nevada Agricultural Experiment Station, which the State Legislature has located at Reno, in connection with the State University. Aside from the usual courses of investigation, this station proposes to give special attention to the feeding of beef cattle and sheep, under the conditions common to Nevada, and also to forest trees and their care.

Prof. E. W. Hilgard of California was obliged to decline the Assistant Secretaryship of Agriculture because of the state of his private affairs and his health. Prof. Hilgard has been granted more help by the regents of the California university, and his many friends will hope that, while he was unable to champion advanced agriculture at Washington, he may long be spared to continue his good work in the cause of progressive farming.

The annual report of the Ohio experiment station, at Columbus, will hereafter be issued in the form of a monthly bulletin, the issues of each calendar year constituting a volume. These bulletins will be consecutively paged, and the December number will contain an index to the entire series of the year, thus putting them in convenient shape for preservation for reference. By this change the results of the station's work for each season will be placed before the farmers of the State nearly or quite a year earlier than was possible when the annual report was issued in a single volume at the close of the year.

LATEST PUBLICATIONS FROM THE STATIONS.

ALABAMA—Experiment Station at Auburn, Bul. 5, April, 56 pp., experiments with cotton fertilizers, feeding pigs for pork, feeding cattle for butter, analyses of fertilizers, soils and feed stuffs.

CONNECTICUT—Second report of the dairy commissioner, 104 pp., 4 illus.; J. B. Tatem, commissioner, Hartford, annual report State Exp. Sta., New Haven; report board of agriculture and experiment station, 606 pp.: T. S. Gold, secretary, West Cornwall. Exp. Sta. at New Haven, Bul. 97, April, 14 pp., fungus diseases of plants. Hatch Exp. Sta. at Storrs, 1st annual report, 104 pp.

DAKOTA—Exp. Sta. at Brookings, Bul. 11, March, 8 pp., small grain; Bul. 12, April, 14 pp., forestry; Bul. 13, April, 28 pp., insects; Bul. 14, April, 6 pp., the sugar beet.

DELAWARE—Exp. Sta. at Newark, Bul. 4, May, 20 pp., 11 illus., injurious insects.

GEORGIA—Exp. Sta. at Athens, Bul. 3, April, 20 pp., some troublesome insects; Bul. 4, July, 8 pp., analyses of cattle foods. Department of agriculture, crop reports for May, June and July.

ILLINOIS—Studies of the chinch bug, 58 pp., S. A. Forbes, State entomologist, Champaign. Exp. Sta. at Champaign, Bul. 4, Feb., 100 pp., field experiments with corn; Bul. 5, May, 24 pp., grasses and clovers.

INDIANA—Exp. Sta. at Lafayette, Bul. 24, May, 16 pp., cold vs. warm water, divided milkings, studies on milk-secretion.

KENTUCKY—Exp. Sta. at Lexington, Bul. 18, April, 14 pp., hemp requirements, notes on the treatment of an old apple orchard.

KANSAS—Report of the State board of agriculture for the quarter ending March 31, 1889, 140 pp., 43 illus.; M. Mohler, secretary, Topeka; same for April, 30 pp., 6 plates; crop and weather bulletin for May 31. Exp. Sta. at Manhattan, extract from annual report, 108 pp., experiments in the corn field, with wheat and forage crops; report of experiments in pig-feeding made by the farm department of the ag'l college, 20 pp., 6 plates; first annual report, 358 pp., 16 illus.

LOUISIANA—Proceedings at the third annual session of the State agricultural society, 52 pp.; T. J. Bird, commissioner, Baton Rouge. Bureau of agriculture, monthly crop reports. Exp. Sta. at Baton Rouge, Bul. 21, Jan., 24 pp., report of the station. Exp. Sta. at Calhoun, Bul. 22, 32 pp., annual report; Bul. 23 of the sugar exp. sta. at Kenner, 38 pp.

MARYLAND—Exp. Sta. at Agricultural College, Bul. 3, Dec., 20 pp., fodder-corn and fodder cane. First annual report, 75 pp. including potato experiments.

MASSACHUSETTS—State board of agriculture, 36th annual report, 660 pp.; William R. Sessions secretary, Boston. State Exp. Sta. at Amherst, 6th annual report, 264 pp.; Bul. 33, March, 12 pp., commercial fertilizers; bulletin, 4 pp., April, analysis of commercial fertilizers; Bul. 34, June, 16 pp., outline of work carried on during the present season. Hatch Exp. Sta. at Amherst, Bul. 4, April, 22 pp., heating greenhouses; Bul. 5, July, 10 pp., household pests; Buls. 3, 4, 5 and 6 of the meteorological report.

MICHIGAN—Exp. Sta. at Agricultural College, Bul. 43, Jan., 34 pp., weather service department report; Bul. 44, Jan., 30 pp., 4 plates, feeding steers of different breeds; Bul. 45, March, 8 pp., planting a grove; Bul. 46, March, 12 pp., potatoes, roots, fertilizers and oats; Bul. 47, April, 46 pp., silos and ensilage; Bul. 48, April, 28 pp., potatoes, kale, experiments with squashes, tomatoes; Bul. 49, May, 8 pp., chemical composition of cornstalks, hay and screenings.

MINNESOTA—Annual report of Exp. Sta. at St. Anthony Park, 418 pp., 58 illus.; Bul. 7, April, 96 pp., soil temperatures, varieties of corn for ensilage, washing and salting butter, construction of greenhouse walls, comparative tests of varieties of potatoes, the chemistry of wheat, and influence of food upon the growth of the skull and teeth of pigs.

MISSISSIPPI—Exp. Sta. at Agricultural College, 1st annual report, 62 pp., S. M. Tracy director; Bul. 6, 2 pp., charbon.

MISSOURI—Exp. Sta. at Columbia, Bul. 5, Feb., 44 pp., soil, weather, field trials with corn.

NEBRASKA—Exp. Sta. at Lincoln, Bul. 5, Jan., some injurious insects; Bul. 6, March, 98 pp., report of progress, field experiments and meteorological record for 1888.

NEVADA—Announcement of Exp. Sta. at Peru.

NEW HAMPSHIRE—Exp. Sta. at Hanover, Bul. 5, March, 18 pp., fertilizers and fertilizing materials; Bul. 6, April, 32 pp., experiments with fertilizers; Bul. 7, May, 16 pp., test of dairy apparatus; first annual report, 104 pp.

NEW JERSEY—Exp. Sta. at New Brunswick, Bul. 52, March, 16 pp., some of the worst weeds in New Jersey, and methods of handling them; Bul. 53, March, 4 pp., prices of nitrogen, phosphoric acid and potash; Bul. 54, March, 12 pp., potash as a fertilizer; Bul. 55, March, 4 pp., entomological suggestions and inquiries; annual report, 256 pp.

NEW YORK—Exp. Sta. at Ithaca, Bul. 4, Dec., 14 pp., growing corn for fodder and ensilage; Bul. 5, April, 20 pp., 3 plates, on the production of lean meat in mature animals, and the effect on the quantity and quality of butter of heating milk; Bul. 6, June, 8 pp., on the determination of hygroscopic water in air-dried fodders, the determination of nitrogen by the azotometric treatment of the solution resulting from the kjeldahl digestion, and fodders and feeding stuffs. Sixth annual report of the board of control of the New York ag. exp. sta. at Geneva, 428 pp.

OHIO—Exp. Sta. at Columbus, Bul. 8, March, 20 pp., insects, insecticides and methods of collecting, preserving and studying insects. Third annual report of the Ohio State forestry bureau and trees and tree-planting, 152 pp., Adolph Leue, secretary, Cincinnati.

OREGON—Exp. Sta. at Corvallis, Bul. 2, Jan., 16 pp., horticultural preparation and notes on future work.

PENNSYLVANIA—Exp. Sta. at State College, B. 7, 24 pp., April, tests of varieties of corn, and analysis and valuation of fertilizers.

TENNESSEE—Exp. Sta. at Knoxville, Bul. 1, Jan., 22 pp., notes on fertilizers and fertilizing materials; Bul. 2, April, 44 pp., diseases of the Irish potato.

TEXAS—Exp. Sta. at College Station, Bul. 5, March, 24 pp., creameries in Texas; first annual report, 88 pp., including a report on cotton blight.

UNITED STATES DEPARTMENT OF AGRICULTURE at Washington, D. C.—Report of the commissioner for 1889, 708 pp., 63 plates, 7 illus.

DIVISION OF CHEMISTRY—Bul. 20 of the record of experiments conducted by the department in the manufacture of sugar from sorghum at Rio Grande, N. J.; Kenner, La., Conway Springs, Douglass, and Sterling, Kan.; 162 pp. Bul. 13, of foods and food adulterations, 150 pp., 10 plates and 10 illus.

STATISTICAL DIVISION—Crop reports for January to July inclusive.

ENTOMOLOGICAL DIVISION—Nos. 6 to 11 of insect life.

BUREAU OF ANIMAL INDUSTRY—Hog Cholera, 196 pp., 15 plates.

EXPERIMENT STATION DIVISION—Bul. 1, February, 82 pp., organization of the agricultural experiment stations in the United States.

BOTANICAL DIVISION—Bul. 10, 56 pp., experiments made in 1888 in the treatment of the downy mildew and black rot.

FORESTRY DIVISION—Bul. 3, 79 pp., the use of metal track on railways as a substitute for wooden ties.

DIVISION OF ECONOMIC ORNITHOLOGY AND MAMMALOGY—Bul. 1, 406 pp., the English sparrow in North America, especially in its relations to agriculture, with a map showing the distribution of the sparrow at the end of 1886.

VERMONT—Nineteenth annual report of the dairymen's association, 146 pp.; E. L. Bass, secretary, Montpelier. Second annual report of the State Exp. Sta. at Burlington, 152 pp.; Bul. 14, March, 16 pp., analysis of fertilizers.

WEST VIRGINIA—Exp. Sta. at Morgantown, Bul. 4, March, 40 pp., the creamery industry.

WISCONSIN—Exp. Sta. at Madison, Bul. 19, April, 28 pp., notes on ensilage.

NOVA SCOTIA—Annual report of the secretary of agriculture for 1888, 256 pp.; George Lawson, secretary, Halifax.

ONTARIO, CANADA—Exp. Sta. at Guelph, Bul 38, April, 6 pp., strawberries; Bul. 38, April, 6 pp., the growth of green fodders; Bul. 39, May, 6 pp., the composition of milk; Bul. 40, May, 6 pp., notes for cheese-makers for May; Bul. 41, 8 pp., milk for cheese-factories; Bul. 42, May, 16 pp., fodder-corn and the silo; 14th annual report of the agricultural college and experimental farm, 148 pp.; James Mills, president, Guelph. Bureau of industries at Toronto, Bul. 25, 12 pp., crops and live stock in Ontario; Bul. 26, Frauds on farmers.

Animal Ailments.

Bloody Milk.—Mrs. Anna McKinney, El Paso Co., Colo., wishes to know what to do for a cow that gives bloody milk, and has a large swelling on her throat. She has probably glandular swellings in the udder. The cow is very poor, and has been starved all winter, but eats well and has a calf a month old. Probably the cow has glandular swellings in the udder. Starved people have boils and glandular swellings, and so do starved cows. We presume that her present owner did not starve the cow but bought her when in this condition. We advise never to buy a starved animal. To remedy the present trouble give an ounce of Glauber salts dissolved in a pint of hot water, and poured hot on four quarts of good wheat bran, night and morning. You have probably fed too freely at first. Starvation requires moderately increasing nourishment.

Splint.—Robert Orr, Fairfield Co., Conn.: A splint is an exastosis deposit of bone either between the small bones and shank, or upon any of the three bones of the forelegs. They usually occur on the inside of the leg, because the concussion is always greatest at the center of gravity, and the splints are found near the middle of the bone, where the irritation and inflammation of the tender tissues seeks relief in pouring out bony matter. Splints do not cause trouble or lameness when they do not interfere with tendons or joints. These are termed simple. Some veterinary surgeons describe five classes of splints, which shows how futile it is to place any reliance upon the advice or remedies of ignorant people when the best informed specialists cannot cure the malady. Avoid splints by driving young horses with moderation and in reason; and never breed from male or female having splints.

Cure for Colic in Horses.—C. H. Allen, Queens Co., N. Y., writes us that he has found three drops of tincture of colocynth a sure cure for colic. The tincture is to be given in three or four tablespoonfuls of water, repeating the dose every twenty minutes until there is relief. Colocynth is a strong irritant, yet, although we do not doubt that horses have recovered from colic after taking three drops of tincture of colocynth, we can hardly believe that so small a dose has produced this effect. It is given to the human subject in doses of from five to fifteen grains. Among the most effectual remedies for both spasmodic and flatulent colic in the horse are the following: Aloes, eight drams; tincture of aconite, thirty drops, in a pint of water; or linseed oil a pint, to which may or not be added an ounce of sulphuric ether; or oil of turpentine, two drams; laudanum, one ounce; linseed oil, a pint, or in great pain, laudanum two ounces; warm water, eight ounces. Veterinarians often use hypodermically Magenda's solution of morphine from twenty to forty drops, or asafetida two ounces, tincture of opium (laudanum) half an ounce. The doses above are in marked contrast to the doses of colocynth, which are not more than from a quarter to a grain, probably.

Prize Farms.—The National Agricultural Society of France has awarded a gold medal to Arthur Brandin, of Seine et Marne, and to M. Tetard, of Saint et Oise, for the excellent management and cultivation of their farms. The Brandin farm has been in the family for upward of 200 years and its records since 1820 were produced. Just 100 years ago it grew an average of 21 bushels of wheat or oats per acre, which rose to 26 bushels in 1840. Shortly after this, commercial manure was for the first time employed and the yield of wheat went up to 32½ bushels per acre and of oats to 41 bushels. Subsequently the land was drained, guano was applied and artificial grasses were grown and fed down, but the average of the wheat crops dropped to 30 bushels, though the quality was better. This system was followed until 1870 without improvement in yield, when the soil was analyzed and found to be rich in potash but deficient in phosphoric acid and lime. These elements were then supplied, tests were made to secure the varieties best adapted to the land, and the yield per acre for the last seven years has risen to 36½ bushels of wheat and 62 bushels of oats. M. Tetard's farm of 812 acres, half way between Paris and Chantilly, has 310 acres in sugar beets, the yield per acre of which, as well as their sugar content, has steadily increased. The average yield of wheat on 250 acres in 1887 was 35 bushels per acre. A large herd of cattle is kept during the winter to consume the beet pulp, in addition to which the cattle get some cottonseed meal or cake, with about six pounds per head of wheat straw, chaff or corn fodder.

Constipation,

IF not remedied in season, is liable to become habitual and chronic. Drastic purgatives, by weakening the bowels, confirm, rather than cure, the evil. **Ayer's Pills,** being mild, effective, and strengthening in their action, are generally recommended by the faculty as the best of aperients.

"Having been subject, for years, to constipation, without being able to find much relief, I at last tried Ayer's Pills. I deem it both a duty and a pleasure to testify that I have derived great benefit from their use. For over two years past I have taken one of these pills every night before retiring. I would not willingly be without them."—G. W. Bowman, 26 East Main st., Carlisle, Pa.

"I have been taking Ayer's Pills and using them in my family since 1857, and cheerfully recommend them to all in need of a safe but effectual cathartic."—John M. Boggs, Louisville, Ky.

"For eight years I was afflicted with constipation, which at last became so bad that the doctors could do no more for me. Then I began to take Ayer's Pills, and soon the bowels recovered their natural and regular action, so that now I am in excellent health."—S. L. Loughbridge, Bryan, Texas.

"Having used Ayer's Pills, with good results, I fully indorse them for the purposes for which they are recommended."—T. Conners, M. D., Centre Bridge, Pa.

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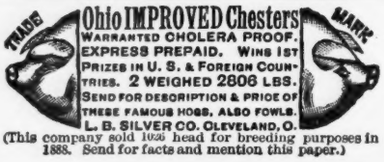

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All our old customers will tell you **who has the very newest** and the most genuinely valuable hardy trees and shrubs for ornament. Every new hardy tree or plant that comes to sight, from any part of the world, is, at once, secured and propagated at our nurseries. If our good friends and patrons who love plants, could only go carefully through our propagating houses, and see the wonderful processes of multiplying the delightful things that have made "Shady Hill Nurseries" famous among plant lovers everywhere, they would remember it, as hundreds do, with enthusiasm.

Send 2 stamps for our two grand illustrated catalogues and have a feast!

TEMPLE & BEARD.

A CHANCE TO MAKE MONEY. Salary and Expenses paid, or Commission if preferred. Salesmen wanted everywhere. No experience needed. Address, stating age, H. W. Foster & Co., Nurserymen, Box M, Geneva, N.Y.

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MAKES THE MOST DELICIOUS HOME DRINK in the world. It is compact, concentrated, convenient. No special facilities are required for its use. During the hot months it is the need of every one to have just such a cool, refreshing SUMMER BEVERAGE within arms reach. 25 cent bottles make 10 gallons. Price 25c., 50c. and $1.25. DRUGGISTS AND GROCERS.

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This shows the Drier set on an ordinary Cook-Stove.

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TO MEET THE DEMAND for a SMALL, CHEAP DRIER, suitable for use on ANY ORDINARY COOK, OIL or GASOLINE STOVE, we now offer the above. It is very SIMPLE, ECONOMICAL, EFFICIENT and CONVENIENT, and FOR FARMERS' USE JUST WHAT IS WANTED, and we believe THE CHEAPEST AND BEST LITTLE DRIER of its class ON THE MARKET.

HOW YOU CAN SECURE ONE.

$8.50 IN VALUE FOR $5.50.

Through a special arrangement we are enabled to offer the U. S. COOK STOVE DRIER, the regular price of which is $7, for ONLY $5, or WITH A YEAR'S SUBSCRIPTION TO THE AMERICAN AGRICULTURIST (regular price $1.50) FOR ONLY $5.50.

To anyone sending a CLUB OF 8 YEARLY SUBSCRIBERS to the AMERICAN AGRICULTURIST, or 4 SUBSCRIBERS and $2 IN MONEY we will send one of the Driers FREE.

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This Drier has Eight Galvanized Wire Cloth Trays containing 12 square feet of tray surface. The dimensions, base 22x16 inches, height 26 inches. Sent by express or freight at receiver's expense. Weight, crated about 27 pounds.

It is always ready for use and will **last a lifetime.** Has been **thoroughly tested and approved**, and will more than please you.

As a **great economizer and Money-maker for Rural People** it is **without a rival.**

With it you can at **odd times, summer or winter, evaporate** enough **wasting fruit,** etc., **for family use,** and enough to **sell or exchange** for **all** or the **greater part** of your **groceries,** and in fact **household expenses. No labor** on the farm **will pay better,** or as well, as that of **converting** your **wasting fruits** into **evaporated stock.** The apples, pears, plums, etc., if evaporated, will sell or exchange pound for pound for butter, granulated sugar or most groceries, while evaporated cherries, raspberries or peaches bring good price. **If you have even only a few trees** in your yard or town lot, one of the U. S. Cook Stove Driers will **enable you at odd hours to evaporate enough fruit for family use** and enough to sell or exchange for the greater part of your groceries.

It is the Greatest Little Bread Winner on the Market.

Its capacity is ample for Domestic Use, being **greater** than **some machines** which sell for **fifteen to twenty dollars.** It is furnished with **Heat-regulating damper** below the trays, which can be **instantly adjusted.** It is **always ready** for immediate use. The working of the machine on sundry fruits, berries, etc., satisfies us that it will happily **fill a want** our correspondents have urged upon us to supply.

TO THE LADIES of the Household in Town or Country, it is **a little Gold Mine.** Thousands of careful, prudent household managers, who have no time nor necessity to engage in evaporating fruit for market as a business, but who have frequent use for just such an article as this for making smaller quantities of dried fruit, berries and vegetables for their own use or for sale, will find it the **most satisfactory** and **profitable investment they could make. A lady can easily lift it** on and off the stove, as it **weighs but about twenty pounds.** It has **interchangeable galvanized wire-cloth trays,** which **will not** rust nor **discolor the fruit,** etc., and will **last for years.** It is made of iron, except tray frames and supports. **Can be used for broiling beef steak, fish,** etc., using but the lower tray for this purpose.

WHAT THE PEOPLE SAY.

A FEW OF HUNDREDS RECEIVED.

The U. S. Cook Stove Drier is **satisfactory** in **every particular.** We have tried it on apples, elderberries and plums, and find it **a most convenient thing for family use.** Fruit dried on it looks splendid.
[HERMAN MYER, St. Mary's, Kansas.

We have tried your Cook Stove Drier on apples, peaches, pears and sweet corn, and it has given **good satisfaction,** the **fruit drying very white** and **retaining** very much of the **flavor** of the **fresh fruit.**
[DAVID COLE, Pleasant Run, N. J.

Your Cook Stove Drier is the **most complete dryer I ever saw.** Our people were **delighted** with the way it **dried everything** they put into it.
[GEO. R. BOAK, Pine Glen, Pa.

The Drier I bought of you was used for drying apples, pears and peaches, and it has **given entire satisfaction.** My wife would not like to part with it.
[H. S. PERRY, Landisville, Pa.

"I have been keeping house over 40 years, and **never had so much dried fruit** in my house, and so **clean and white.** For myself, I will say it is **better than I looked for.** It is **simply wonderful** what a quantity can be gotten through the little machine; and so **little trouble.**
[MRS R. HURST.

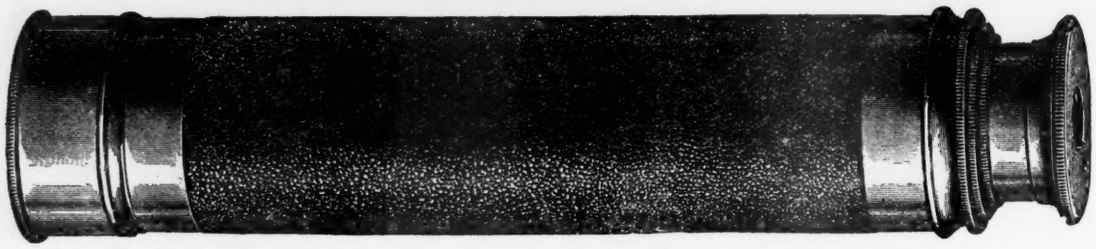
I take pleasure in recommending to the public, the U. S. Cook Stove Drier. I purchased one and **after a thorough test** I pronounce it **the best and cheapest article** of the kind **in the market.** I cheerfully recommend it to the public as **a first-class drier.**
[WALTER S. LONG, Fairplay, Md.

Have evaporated sweet corn, apples, tomatoes, pears, peaches and grapes **without any trouble,** and find the **fruit keeps well** and **retains its flavor** better than when dried in the old-fashioned way. **Every housekeeper ought to have one.** I would not be without it for twice its cost, as it is **useful in many other ways** besides evaporating fruit. **I find use for it every day** in the year. [MRS ANNIE E. BUCK, New Milford, Ct.

Address all orders to THE AMERICAN AGRICULTURIST, 751 Broadway, New York.

AMERICAN AGRICULTURIST

FRENCH ACHROMATIC TELESCOPE.



FULL SIZE OF TELESCOPE CLOSED.

FOR ONLY $3.00 we will send one of these telescopes postpaid to any post office in the United States and in addition will include with each instrument

A YEAR'S SUBSCRIPTION FREE TO THE AMERICAN AGRICULTURIST.

The telescope and subscription sent to separate addresses if desired.

A FIRST CLASS INSTRUMENT.

This telescope is first class in every respect and our subscribers testify that it is equal to other instruments that cost from $5.00 to $15 each.

High power achromatic telescopes have heretofore sold at prices placing them almost beyond the reach of persons of moderate means. The telescope we now offer is just what the people want, **a real philosophical instrument, at a low price.**

FARMERS, HERDSMEN, HUNTERS, PROSPECTORS, SAILORS, TRAVELERS, TOURISTS, AND, IN FACT, EVERYBODY, WILL FIND THIS INSTRUMENT INVALUABLE.

Farmers and herdsmen can see their **cattle or sheep miles away.**

Hunters can distinguish **game at great distances,** and by this means not give warning of their approach.

The tourist can bring distant mountains, valleys and cities almost to his feet, while anyone with this telescope will soon become familiar with different objects that before (from their great distance) he knew nothing of.

Friends and acquaintances can be recognized at great distances, and the instrument will prove both instructive and amusing to everyone.

DESCRIPTION OF THE TELESCOPE.

DIMENSIONS:—The length of the telescope, when extended, is 16½ inches; when closed, 6 inches; diameter, 1¾ inches.

FIVE LENSES. This useful and beautiful instrument has **five lenses,** of the **best French manufacture. The object lenses** are **achromatic.** that is, **convex** and **concave,** having different retractive and dispersive powers, with the curvatures so adjusted that the chromatic aberration produced by the one is corrected by the other, and light emerges from the compound lens undecomposed, or free from color, **objects at a long distance** appearing clear and natural.

BRASS SLIDES. **The slides and mountings** are made of **brass** highly polished, the telescoping tubes fitting closely into each other.

BRASS SAFETY CAPS. **Safety caps** of **polished brass** cover the **exposed ends** of the instrument, **keeping out dampness** and **dust** when not in use.

MOROCCO COVERED TUBES. The main tube or body of the telescope is covered with handsome French morocco, making it altogether a most excellent instrument.

Each Telescope is furnished in a strong cloth covered case. It is strongly made and cannot get out of order, but will last for a lifetime.

HOW FAR YOU CAN SEE WITH IT.

If the atmosphere is clear you can see **the time** on a **tower clock** at a **distance of five miles. A man** who is **one mile away** will appear to be **fifteen rods** from you, and **persons** with whom you are familiar **can be recognized** at a distance of **three or four miles. The moons of Jupiter can be seen with it.** What are supposed to be **mountains** or **extinct craters** on the **surface of the moon** can be **seen plainly** with the glass.

There is not a man, woman or child that cannot find uses for such a glass almost every day of their life. **Many of our customers write** us that they have **never had so much pleasure and enjoyment** from a small investment as **this telescope has afforded them.**

(See Next Page.)

What Our Subscribers Say of This Telescope.

Equal to a $15 Instrument.

Some time ago I received my French Achromatic Telescope by mail in good order, and feel well pleased with it. I think it fills the recommendation of your advertisement. **I have compared it with a field glass costing $15** and with another Telescope of English manufacture of 3 inches more length **costing $7.00, and consider the power of yours fully equal to either of the higher priced glasses.**—[George H. Northrop, Naugatuck, Ct.

Worth Four Times its Cost.

The French Achromatic Telescope ordered of you some time since is indeed a **superb instrument.** I have frequently observed the **nail-heads in a barn wall at a distance of half a mile. Four times its cost would not induce me to part with it.**—[Marquis P. Truax, Almo, Ind.

Sees Objects 40 Miles.

The French Achromatic Telescope is **fully as represented in every particular** and exactly the same in all respects if not **better than the ten-dollar Telescopes** for sale in our city stores. I use it in my school and **my pupils see objects 40 miles off** quite distinctly as if right before us. **Can tell persons three miles off** and tell which direction the **vanes on barns and houses stand for 6 or 7 miles.**—[Erb Steiner, Spring Mount, Pa.

Wouldn't Take $5.00 for it.

Telescope received to-day. There are so many cheap imitations that I was reluctant about placing my order with you. But **I am well pleased with it** and it is **all you represent it to be. I would not take $5.00 for it.**—[M. W. Knight, Kingsdown, Kans.

Sees 30 Miles.

The French Achromatic Telescope I received of you gives **good satisfaction. Rocks, trees and bushes are distinctly seen** at the **top of Smoky Mountain** from our residence, **30 miles distant.**—[M. F. Johnson, Maryville, Tenn.

Combines the Field Glass and Telescope.

Of the Achromatic Telescope that I recently purchased of you I am free to say that I do not know how in the world such an instrument can be made and furnished at so low a figure. **From my piazza** on the West bank of the Hudson, **I can see** through this instrument **vessels sailing by Poughkeepsie seven miles off** and could see much further but for the bend in the river. Can read the banners of all the boats passing up and down the river and distinguish passengers. It seems **to combine the qualities of the field glass and of the telescope.** I have tried it on the moon and discovered that she is more "looney" (Luna) than ever. "The man in the moon" is plainly apparent and so are some of the craters. The instrument brings the stars near enough to see a gyrating motion; astronomers can tell better than I whether it be their orbit or revolution—certainly this can only be the effects of immense magnifying power.—[L. R. Dickinson, Rector Ascension Church, West Park, N. Y.

Sees Objects 12 Miles.

The telescope **answers my expectations fully. I can see objects 10 or 12 miles away very plain** when it is clear, and the Moon looks a great deal plainer through it than it does to the naked eye. I don't see how you can afford to give so much for the amount of money you receive. Other concerns offer telescopes which they claim are larger for less money, but it don't seem to me that they could be reliable; they must be cheaply and poorly made.—[Willis A. Warren, Abington, Ct.

Just as Represented.

The French Achromatic Telescope ordered, you sent me very promptly. **I find it to be as you represented in every detail.** It gives me much pleasure in looking off at long distance. **Objects one mile away** look to be almost **within reach. I would not part** with it for a **five dollar note.** Anyone wishing for a glass of this kind, will find it to be a prize. My experience is, when the AGRICULTURIST advertises anything it can be relied upon, as being as represented.—[W. H. Fifield, Chicopee, Mass.

Never Expected Such a Glass.

I have received the telescope in good order and **am well satisfied** with it; **it far exceeds my expectations.** I cannot tell how far I can see, as we live too much among the hills to give it full range, but **I never expected to receive such a glass for the price.** I got one advertised in another paper some years ago—it is much longer but no good; it is made of paper and looks like morocco and is a humbug. **I would not take three times for the one I got of you what I paid for it** if I could not get another like it. Anyone wanting a glass of this kind need not fear to invest in your offer.—[George A. Hoppen, Fishers Ferry, Pa.

Better Than a $11 Instrument.

The French Achromatic Telescope I ordered of you is received and is **just as good as represented. I compared it with one much larger that cost $11 and could see better with mine.** While it is a first class instrument it can be closed up and carried in your pocket without the least inconvenience.—[P. H. Sumner, M. D., Camptown, Pa.

Surprised at the Quality.

The Telescope ordered of you came to hand in due time and **I am quite surprised at the quality of it,** expecting nothing but a "cheap John" affair at the price paid, instead of which I have **an article of real merit** and I think **fully equal to three or five times its cost.**—[Geo. O. Guild, Bellow Falls, Vt.

Beautiful, Entertaining, Serviceable.

I received the Telescope O. K. and am well pleased. It speaks for itself, and when one of my comrades doubts its power, all I have to do to convince him is to hand him the glass. **It is a beautiful, entertaining** and above all **a serviceable instrument** that anyone would be proud to own. —[Chas T. Shaffer, David Island, New York.

All We Claimed for It.

I received the telescope by mail in good order. **Am more than pleased** with it and have **enjoyed myself** in using it while traveling through the country **more than double its cost.** I find it **better than I expected** and **all you claim for it.** I have let others try it and they **all pronounce it a very clear distinct glass, as good** as they **ever saw** for its size.—[Geo. B. Harris, Centreville, R. I.

Expectations Fully Realized.

It is **with pleasure** that I embrace this opportunity of testifying to **the merits of the French Achromatic Telescope** sent me by the "AMERICAN AGRICULTURIST." **I am much pleased with it** and I have **realized fully the expectations** which I derived from reading your advertisement respecting it.—[Geo. F. Beale, Cola, Pa.

Better Than Expected.

I received the Telescope all O. K. and find it to be **just what you advertised it** to be and **better than I expected to get.** I have compared it with one I paid $5 for and think it is **equally as good as the $5 Telescope.** —[Edgar Sweet, Kingston, R. I.

Just Splendid.

The telescope I received as a premium with your Magazine is **just splendid—superior to what I expected to get,** and is giving me and my friends **much pleasure,** for which accept thanks. [L. A. Kennard, Boston, Mass.

Disappointed—Agreeably.

The French Achromatic Telescope came promptly to hand in answer to my order, and I have this to say in regard to it, viz: **That in two particulars I am disappointed.** First, **it surpasses my expectations.** Second, **I find it just as you advertised.**—[H. A. Smith, So. New Berlin, N. Y.

More than Satisfied.

When I first saw your advertisement of a Telescope for the small sum of $1.50 in connection with $1.50 for the AMERICAN AGRICULTURIST I felt half suspicious that the instrument could not be so powerful as represented. But I said to myself, "I never knew that firm to misrepresent any article they advertised and I will try one." I did so, and **after several weeks' trial am more than satisfied.** Last Sunday I went upon one of the neighboring hills to take a look at the flood, and with that Telescope **I could see what was going on miles away, read the names of steamers passing up the river,** and **the signs in the city,** etc. I am at a loss to know how so good an instrument can be offered for so little money.—[Alpheus Darrison, Anacostia, D. C.

How You Can Secure One.

On receipt of $3 we will send one of these Telescopes put up in a neat case, by mail postpaid to any postoffice in the United States, and in addition will include

A Year's Subscription Free to the American Agriculturist.

The subscription and instrument sent to separate addresses if desired.

How You Can Get This Telescope for $1.50.

Induce some friend or neighbor to hand you his subscription to the AMERICAN AGRICULTURIST ($1.50), to which add $1.50 and we will send him a year's numbers and the telescope to you.

TO CANVASSERS: For $6 we will send six yearly subscriptions to the AMERICAN AGRICULTURIST and the Telescope to the sender of the club.

If you cannot procure six subscribers, send four subscribers at $1 each and add $1 in money ($5 in all) and we will send the Telescope postpaid. Subscribers taking any of our book offers count the same as for the AMERICAN AGRICULTURIST only.

SPECIAL 60 DAYS OFFER RENEWED.

We want to introduce one of these Telescopes into every home where this magazine is read, and as an inducement to order immediately we will continue to send with every Telescope ordered previous to September 1, 1889, a

London Pocket Microscope FREE.

See Full Description in May Issue.

Address all orders to

The American Agriculturist, 751 Broadway, New York.

State, County and Other Fairs in 1889.

PREPARED EXPRESSLY FOR THE AMERICAN AGRICULTURIST.

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STATE PROVINCIAL FAIRS.

Am. Institute	New York	Oct. 2-Nov. 30
Arizona	Phoenix	Oct. 16-19
Arkansas	Pine Bluff	Oct. 22-25
California	Sacramento	Sept. 9-21
Canada	Toronto	Sept. 9-21
Connecticut	Meriden	Sept. 17-20
Dakota	Grand Forks	Sept. 17-21
Delaware	Dover	Oct. 1-4
Georgia	Macon	Oct. 23-Nov. 1
Illinois	Peoria	Sept. 23 27
Illinois (Inter-State)	Springfield	Sept. 10-13
Indiana	Indianapolis	Sept. 23-28
Iowa	Des Moines	Aug. 30-Sept. 6
Kansas	Topeka	Sept. 16-21
Louisiana	Shreveport	Oct. 8-14
Massachusetts	Boston	Oct. 3-12
Michigan	Lansing	Sept. 9-13
Missouri	St. Louis	Oct. 7-12
Minnesota	Minneapalis	Aug. 21-Sept. 28
Montana	Helena	Aug. 26-31
Nebraska	Lincoln	Sept. 9-13
New Jersey	Trenton	Sept. 30-Oct. 4
New Jersey		
"Waverly Park"	Newark	Sept. 16-20
New York		
(Inter-State)	Elmira	Sept. 17-26
New York	Albany	Sept. 12-19
Ohio	Columbus	Sept. 2-6
Ohio (Tri-State)	Toledo	Sept. 9-13
Oregon	Salem	Sept. 16
Rhode Island	Narragansett Park	Sept. 24-28
South Carolina	Columbia	Nov. 11-15
Texas	Dallas	Oct. 15-17
Utah	Salt Lake City	Oct. 2-5
W. Virginia	Wheeling	Sept. 9-13
Wisconsin	Milwaukee	Sept. 16-20
Wyoming	Cheyenne	Sept. 17 20
Washington	Spokane	Sept. 23-28

ALABAMA.

Madison	Huntsville	Oct. 15-19

ARIZONA.

Maricopa	Phoenix	Oct. 16-19

ARKANSAS.

Independence	Batesville	Oct. 22-25
Phillips	Helena	Oct. 22-26
White	Judsonia	Oct. 15-17

CALIFORNIA.

El Dorado	Placerville	Sept. 3-7
Fresno	Fresno City	Oct. 1-4
Humboldt	Rohnerville	Sept. 23-27
Inyo	Independence	Oct. 1-4
Napa	Napa City	Aug. 12-17
Plumas	Quincy	Sept. 23-27
San Joaquin	Stockton	Sept. 24-Oct. 5
Santa Barbara	Santa Barbara	Oct. 1-4
Santa Clara	San Jose	Sept. 30-Oct. 5
Shasta	Redding	Aug. 21-24
Sonoma	Sonoma	Aug. 20

CALIFORNIA DISTRICT.

San Luis Obispo	San Luis Obispo	Sept. 24-28

COLORADO.

Boulder	Boulder	Oct. 1-4
Larimer	Fort Collins	Sept. 24-27
Sagauche	Sagauche	Oct. 2-4

CONNECTICUT.

Fairfield	Danbury	Oct. 7-12
New London	Norwich	Sept. 24-26
Windham	Brooklyn	Sept. 17-19

DAKOTA.

Clay	Vermillion	Sept. 17-20
Deuel	Gary	Oct. 3-5
Kidder	Steele	Sept. 20-23
Ransom	Lisbon	Sept. 25-27
Richland	Wahpeton	Sept. 24-26
Sanborn	Arteslan	Sept. 12-24
Turner	Parker	Oct. 1-3
Union	Elk Point	Sept. 11-13

DAKOTA DISTRICT.

Campbell	LeGrace	Oct. 25
Lawrence	Deadwood	Sept. 23
Wells	Sykeston	Sept. 24-26

ILLINOIS.

Adams	Quincy	July 23-26
Boone	Belvidere	Sept. 10-13
Brown	Mt. Sterling	Aug. 26-30
Bureau	Princeton	Sept. 10-13
Carroll	Mt. Carroll	Sept. 9-13
Champaign	Champaign	Aug. 27-31
Coles	Charleston	Sept. 10-14
Christian	Pana	Sept. 10-14
Crawford	Fairgrounds	Sept. 24-27
DeKalb	Sycamore	Sept. 17-20
DuPage	Wheaton	Sept. 10-12
DeWitt	Clinton	Sept. 9-13
Edgar	Paris	Sept. 2-6
Effingham	Watson	Sept. 24-27
Fayette	Vandalia	Sept. 3-6
Franklin	Benton	Sept. 17-20
Fulton	Avon	Sept. 17-20
Gallatin	Shawneetown	Aug. 27-31
Hamilton	McLeansboro	Sept. 10-13
Hancock	Carthage	Sept. 9-13
Henry	Cambridge	Aug. 26-29
Jasper	Newton	Sept. 10-13
Jersey	Jerseyville	Oct. 15-18
JoDaviess	Galena	Oct. 1-4
Johnson	Vienna	Oct. 8-12
Kankakee	Kankakee	Sept. 10-13
Kendall	Yorkville	Sept. 3-6
LaSalle	Ottawa	Aug. 13-16
Macoupin	Carlinville	Sept. 3-6
Marion	Salem	Oct. 1-4
McDonough	Macomb	Aug. 26-30
McHenry	Woodstock	Sept. 3-6
McLean	Bloomington	Sept. 17-20
Menard	Petersburg	Sept. 3-6
Mercer	Aledo	Sept. 17-20
Montgomery	Hillsboro	Sept. 17-20
Ogle	Oregon	Sept. 17-20
Perry	Pinckneyville	Oct. 8-11
Piatt	Monticello	Aug. 19-23
Pike	Pittsfield	Aug. 20-23
Richland	Olney	Sept. 17-20
Saline	Harrisburg	Sept. 3-6
Schuyler	Rushville	Aug. 19-23
Union	Jonesboro	Sept. 10-14
Wabash	Mt. Carmel	Sept. 3-6
Warren	Monmouth	Sept. 10-13
White	Carmi	Sept. 3-7
Whiteside	Morrison	Sept. 3-6
Winnebago	Rockford	Sept. 2-6

INDIANA.

Adams	Decatur	Sept. 25-27
Blackford	Hartford City	Aug. 27-30
Boone	Lebanon	Aug. 19-23
Clark	Charlestown	Sept. 2-6
Clinton	Frankfort	Aug. 26 30
Daviess	Washington	Sept. 23-28
Dearborn	Lawrenceburg	Aug. 20-25
Decatur	Greensburg	Aug. 27-31
Delaware	Muncie	Aug. 20-24
Elkhart	Goshen	Sept. 24-27
Fulton	Rochester	Sept. 4-7
Fountain	Covington	Sept. 16
Gibson	Princeton	Sept. 9-14
Grant	Marion	Aug. 27-30
Greene	Linton	Sept. 2-6
Hamilton	Noblesville	Aug. 26-30
Hancock	Greenfield	Aug. 20-23
Harrison	Corydon	Sept. 9 13
Henry	New Castle	Aug. 13-17
Huntington	Huntington	Sept. 17-21
Jackson	Brownstown	Sept. 23-27
Jay	Portland	Oct. 1-4
Jefferson	Wirt Station	Sept. 3-5
Jennings	No. Vernon	Aug. 6-10
Johnson	Franklin	Sept. 17-21
Knox	Vincennes	Sept. 30-Oct. 5
Lake	Crown Point	Oct. 1-4
Laporte	Laporte	Sept. 10-13
Lawrence	Bedford	Sept. 10-15
Madison	Anderson	Sept. 2-6
Monroe	Bloomington	Sept. 16-20
Montgomery	Crawfordsville	Sept. 9-13
Newton	Morocco	Sept. 10-14
Noble	Ligonier	Oct. 8-11
Owen	Spencer	Sept. 9-14
Parke	Rockville	Aug. 19-24
Perry	Rome	Sept. 30-Oct. 5
Pike	Petersburg	Sept. 2-6
Porter	Valparaiso	Sept 24-27
Posey	New Harmony	Sept. 16-20
Randolph	Winchester	Sept. 3-6
Ripley	Osgood	Aug. 12-16
Rush	Rushville	Sept. 10-13
St. Joseph	Mishawaka	Sept. 16-20
Shelby	Shelbyville	Sept. 3-7
Spencer	Rockport	Sept. 23-28
Spencer	Chrisney	Sept. 30-Oct. 5
Steuben	Angola	Sept. 24-27
Sullivan	Sullivan	Sept. 9-14
Tippecanoe	Lafayette	Sept. 2-6
Tipton	Tipton	Aug. 13-17
Vermillion	Eugene	Sept. 2-6
Vigo	Terre Haute	Aug. 26-30
Wabash	Wabash	Sept. 24-27
Warren	W. Lebanon	Aug. 19-24
Warrick	Boonville	Oct. 7-12
Washington	Salem	Sept. 4-7

INDIANA DISTRICT.

Blackford	Montpelier	Aug. 13-17
De Kalb	New Castle	Sept. 4-6
Fountain	Covington	Sept. 16-20
Grant	Fairmount	Sept. 16-20
Greene	Bloomfield	Sept. 16-21
Hamilton	Arcadia	Aug. 19-23
Hamilton	Carmel	Aug. 21-23
Hamilton	Sheridan	Sept. 1-7
Henry	Knightstown	Aug. 27-31
Henry	Middletown	Aug. 6-9
Hendricks	No. Salem	Sept. 2-6
Howard	Poplar Grove	Oct. 1-5
Huntington	Warren	Sept. 3-7
Jasper	Remington	Aug. 27-30
Johnson	Urmeyville	Oct. 1-4
Kosciusho	Warsaw	Sept. 16-20
Marion	Acton	Sept. 10-14
Marion	Lawrence	Sept. 3-6
Martin	Loogootee	Aug. 27-31
Miami	Xenia	Aug. 20-23
Miami	Macy	Sept. 11-14
Montgomery	New Ross	Aug. 12-16
Newton	Kentland	Sept. 3-6
Noble	Kendallville	Sept. 30-Oct. 4
Orange	Orleans	Sept. 25-28
Parke	Bridgeton	Aug. 5-11
Posey	Mt. Vernon	Sept. 23-28
Pulaski	Francesville	Oct. 1-4
Rush	Manilla	Aug. 13-16
St. Joseph	So. Bend	Sept. 16-20
St. Joseph	New Castle	Sept. 4-6
Switzerland	E. Enterprise	Sept. 10-13
Vermillion	Newport	Sept. 30-Oct. 5
Wabash	N. Manchester	Sept. 30-Oct. 3
Washington	Pekin	Sept. 17-20
Wayne	Dalton	Sept. 10-13

IOWA.

Adams	Corning	Sept. 9-13
Appanoose	Centerville	Sept. 3-6
Benton	Vinton	Sept. 10-13
Buchanan	Independence	Aug. 26-29
Butler	Allison	Sept. 9-12
Calhoun	Rockwell City	Sept. 18-20
Carroll	Carroll	Sept. 17-19
Cass	Atlantic	Sept. 10-13
Cerro Gordo	Mason City	Sept. 10-12
Clarke	Osceola	Sept. 11-13
Clay	Spencer	Sept. 11-13
Crawford	Denison	Sept. 19-21
Dallas	Adel	Sept. 17-20
Davis	Bloomfield	Sept. 3-6
Delaware	Manchester	Sept. 10-13
Des Moines	Burlington	Sept. 9-13
Fayette	West Union	Sept. 3-6
Floyd	Charles City	Sept. 18-20
Greene	Jefferson	Aug. 27-30
Grundy	Grundy Center	Sept. 17-19
Hancock	Britt	Sept. 17-19
Hardin	Eldora	Sept. 10-13
Howard	Cresco	Aug. 27-30
Iowa	Marengo	Sept. 10-13
Jefferson	Fairfield	Sept. 24-26
Johnson	Iowa City	Aug. 26-29
Keokuk	Sigourney	Sept. 10-13
Kossuth	Algona	Sept. 25-27
Lee	Donnellson	Sept. 3-6
Louisa	Wapello	Sept. 3-6
Lucas	Chariton	Sept. 24-26
Mahaska	Oskaloosa	Aug. 26-30
Marion	Knoxville	Aug. 20-23
Mill	Malvern	Sept. 24-26
Mitchell	Osage	Sept. 12-14
Monroe	Albia	Sept. 17-20
Montgomery	Red Oak	Sept. 16-20
Osceola	Sibley	Sept. 10-12
Page	Clarinda	Sept. 2-6
Palo Alto	Emmetsburg	Oct. 2-4
Shelby	Harlan	Aug. 26-29
Story	Nevada	Sept. 18-20
Union	Afton	Oct. 1-4
Van Buren	Keosauqua	Sept. 17-20
Wapello	Ottumwa	Aug. 19-23
Warren	Indianola	Sept. 24-27
Wayne	Corydon	Sept. 9-13
Webster	Fort Dodge	Oct. 2-4
Winneshiek	Decorah	Sept. 10-13
Winnebago	Forest City	Sept. 24-26
Worth	Worthwood	Sept. 17-20
Wright	Clarion	Sept. 17-20

IOWA DISTRICT.

Clayton	Strawberry Point	Aug. 27-30
Decatur	Leon	Sept. 17-20
Jackson	Maquoketa	Sept. 10-13
Scott	Mount Joy	Sept. 10-13

KANSAS.

Anderson	Garnett	Aug. 27-30
Atchison	Atchison	Sept. 9-14
Bourbon	Fort Scott	Oct. 1-4
Brown	Hiawatha	Sept. 3-6
Chase	"Cottonwood Falls"	Sept. 4-6
Clay	Clay Center	Oct. 1-4
Coffey	Burlington	Sept. 9-13
Cowley	Winfield	Sept. 3-7
Crawford	Girard	Sept. 24-27
Ellis	Hays City	Sept. 10-13
Franklin	Ottawa	Sept. 3-7
Harvey	Newton	Sept. 3-6
Jefferson	Oskaloosa	Sept. 10-13
Jewell	Mankato	Sept. 10-13
Lincoln	Lincoln	Sept. 25-27
Linn	Mound City	Sept. 16-20
Montgomery	Independence	Sept. 9-13
Nemaha	Seneca	Sept. 17-20
Neosho	Erie	Oct. 9-11
Osborne	Osborne	Sept. 17-20
Ottawa	Minneapolis	Oct. 9-11
Phillips	Phillipsburg	Sept. 17-30
Pottawatomie	Wamego	
Rawlins	Atwood	Oct. 1-3
Reno	Hutchinson	Sept. 17 20
Rush	La Crosse	Sept. 18-20
Sumner	Wellington	Aug. 27-30
Shawnee	Topeka	Sept. 16-21
Smith	Smith Center	Sept. 18-21

KENTUCKY.

Adair	Columbia	Aug. 20-23
Anderson	Lawrenceburg	Aug. 20-23
Bourbon	Paris	Sept. 3-7
Boyle	Danville	Aug. 6-9
Breathill	Jackson	July 4
Caldwell	Princeton	Oct. 9-12
Christian	Hopkinsville	Oct. 16-19
Daviess	Owensboro	Oct. 8-12
Fayette	Lexington	Aug. 27-31
Hardin	Elizabethtown	Sept. 10-13
Hart	Horse Cave	Sept. 17-20
Henderson	Henderson	Oct. 1-5
Hopkins	Madisonville	Sept. 25-28
Laurel	London	Aug. 28-30
Madison	Kirksville	July 26-27
Mason	Germantown	Oct. 1-5
Nelson	Bardstown	Sept. 3-6
Ohio	Hartford	Oct. 2-4
Pulaski	Somerset	Sept. 10-13
Shelby	Shelbyville	Aug. 27-30
Warren	Bowling Green	Sept. 4-7

KENTUCKY DISTRICT.

Jefferson	Fern Creek	Aug. 20-22

MAINE.

Aroostook	Houlton	Sept. 25-26
Franklin	Farmington	Oct. 1-3
Lincoln	Damariscotta	Oct. 1-4
Oxford	So. Paris	Oct. 1-3
Sagadahoc	Topsham	Oct. 8-10
Somerset	Skowhegan	Oct. 1-3

MARYLAND.

Cecil	Elkton	Oct. 8-11
Frederick	Frederick City	Oct. 15-18
Harford	Bel Air	Oct. 8-11
Montgomery	Rockville	Sept. 4-6
Talbot	Easton	Sept. 24-27
Washington	Hagerstown	Oct. 14-18

MASSACHUSETTS.

Anne Arundel	Bay Ridge	Aug. 27-30
Barnstable	Barnstable	Sept. 24-25
Berkshire	No. Adams	Sept. 17-19
Berkshire	Pittsfield	Sept. 10-13
Berkshire	Great Barrington	Sept. 25-26
Bristol	Taunton	Sept. 24-26
Dukes	W. Tisbury	Sept. 3-5
Essex	Beverly	Sept. 24-25
Franklin	Charlemont	Sept. 12-13
Franklin	Greenfield	Sept. 26-27
Hampden	Blandford	Sept. 11-12
Hampden	Palmer	Sept. 17-18
Hampden	Westfield	Sept. 18-19
Hampshire	Amherst	Sept. 19-20
Hampshire	Middlefield	Sept. 4-5
Hampshire	Cummington	Sept. 24-25
Hampshire	Northampton	Oct. 2-3
Middlesex	Framingham	Sept. 17-18
Middlesex	Lowell	Sept. 24-25
Middlesex	Concord	Sept. 25-26
Nantucket	Nantucket	Sept. 4-5
Plymouth	Brockton	Oct. 2-5
Plymouth	Hingham	Sept. 24-25
Plymouth	Bridgewater	Sept. 18-19
Plymouth	Marshfield	Sept. 11-13
Worcester	Oxford	Sept. 18-19
Worcester	Spencer	Oct. 3-4
Worcester	Fitchburg	Sept. 24-25
Worcester	Athol	Sept. 17-18
Worcester	Sturbridge	Sept. 12-13
Worcester	Barre	Sept. 26-27
Worcester	Clinton	Sept. 11-12

MICHIGAN.

Bay	Bay City	Sept. 17-19
Barry	Hastings	Oct. 1-4
Branch	Coldwater	Sept. 23-27
Calhoun	Marshall	Oct. 1-4
Clare	Harrison	Sept. 24-27
Clinton	St. Johns	Oct. 1-4
Eaton	Charlotte	Oct. 1-4
Genesee	Flint	Oct. 1-4
Gladwin	Gladwin	Sept. 23-27
Grand Traverse	Traverse City	Sept. 17-20
Hillsdale	Hillsdale	Oct. 1-4
Ingham	Mason	Sept. 25-27
Isabella	Mt. Pleasant	Sept. 25-28
Kalamazoo	Kalamazoo	Oct. 1-4
Kent	Grand Rapids	Sept. 23-27
La Peer	Lapeer	Sept. 30-Oct. 2
Lenawee	Adriance	Sept. 24-27
Macomb	Mt. Clemens	Oct. 2-4
Mason	Ludington	Sept. 17-20
Mecosta	Big Rapids	Sept. 17-19
Midland	Midland	Oct. 1-3
Montcalm	Stanton	Sept. 3-6
Muskegon	Muskegon	Sept. 18-20
Oakland	Pontiac	Oct. 1-4
Oceana	Hart	Oct. 1-4
Ogemaw	West Branch	Sept. 24-26
Otsego	Gaylord	Sept. 25-26
Pipestone	Pipestone City	Sept. 17-19
Roscommon	Roscommon	Sept. 17-19
Saginaw	Saginaw	Sept. 23-27
Washtenaw	Ann Arbor	Sept. 24-27
Wayne	Detroit	Sept. 17-27
Wexford	Cadillac	Oct. 1-3

MICHIGAN DISTRICT.

Ionia	Ionia	Sept. 17-20
Tuscola	Caro	Sept. 17-20

MINNESOTA.

Anoka	Anoka	Sept. 3-5
Brown	New Ulm	Sept. 20-22
Carver	Carver	Sept. 25
Fillmore	Preston	Sept. 17-20
Houston	Caledonia	Sept. 24-28
Lac-Qui-Parle	Madison	Sept. 19-21
Meeker	Litchfield	Sept. 18-20
Mower	Austin	Sept. 17-19
Nicollet	St. Peter	Sept. 19-21
Ramsey	Hamline	Sept. 6-14
Stearns	St. Cloud	Sept. 18-20
Todd	Long Prairie	Sept. 17-19
Waseca	Waseca	Sept. 26-28

MINNESOTA DISTRICT.

Blue Earth	Mankato	Aug. 28-31
Olmsted	Rochester	Sept. 2-7

MISSOURI.

Adair	Kirksville	Sept. 17-20
Audrain	Mexico	Aug. 6-10
Atchinson	Rockport	Sept. 17-20
Callaway	Fulton	Aug. 13-17
Carroll	Carrollton	Sept. 10-14
Charlton	Keytesville	Oct. 1-5
Clark	Kahoka	Aug. 27-30
Franklin	Washington	Sept. 5-7
Gasconade	Hermann	Aug. 30-31
Gentry	Albany	Sept. 10-13
Greene	Springfield	Sept. 2-7
Henry	Clinton	Sept. 4-7
Holt	Maitland	Sept. 10
Jasper	Carthage	Sept. 24-28
Johnson	Holden	Aug. 27-30
Lawrence	Mt. Vernon	Aug. 19-23
Lincoln	Troy	Sept. 10-13
Marion	Palmyra	Oct. 1-5
Moniteau	California	Sept. 17-20
Monroe	Paris	Aug. 27-Sept. 1
Nodaway	Maryville	Sept. 9-14
Platte	Platte City	Aug. 27-31
Pettis	Sedalia	Aug. 20-24
Polk	Bolivar	Sept. 10-14
Oregon	Thomasville	Oct. 1
Schuyler	Lancaster	Sept. 11-14
St. Charles	St. Charles	Sept. 10-12
Sullivan	Milan	Sept. 4-7
Vernon	Nevada	Sept. 10-13
Putnam	Unionville	Sept. 11-14

MISSOURI DISTRICT.

Caldwell	Hamilton	Aug. 27-30
Cape Girardeau	Cape Girardeau	Oct. 15-19
Grundy	Trenton	Sept. 10-13
Noble	Caldwell	Sept. 11-13
Ray	Lawson	Aug. 21-24

NEBRASKA.

Adams	Hastings	Sept. 4-7
Antelope	Neligh	Oct. 2-4
Boone	Albion	Sept. 18-20
Buffalo	Kearney	Sept. 17-20
Burt	Tekamah	Sept. 25-27
Butler	David City	Oct. 1-4
Box Butte	Nonpareil	Oct. 3-5
Cass	Plattsmouth	Sept. 16-19
Cheyenne	Sidney	Sept. 18-20
Clay	Clay Center	Sept. 17-20
Colfax	Schuyler	Sept. 18-20
Custer	Broken Bow	Sept. 17-20
Dawson	Lexington	Sept. 24-27
Dodge	Fremont	Sept. 17-20
Douglas	Omaha	Sept. 2-6
Frontier	Stockville	Sept. 25-27
Fillmore	Geneva	Sept. 23-26
Franklin	Bloomington	Sept. 25-27

Furnas	Beaver City	Sept. 24-26
Gage	Beatrice	Sept. 1-4
Greeley	Greeley Center	Oct. 1-3
Hall	Grand Island	Sept. 24-27
Hamilton	Aurora	Sept. 17-20
Harlan	Orleans	Sept. 18-20
Hayes	Hayes Center	Sept. 25-27
Hitchcock	Culbertson	Oct. 1-4
Holt	O'Neill	Sept. 25-27
Jefferson	Fairbury	Sept. 17-20
Johnson	Tecumseh	Sept. 4-6
Kearney	Minden	Sept. 24-27
Lancaster	Lincoln	Sept. 6-13
Lincoln	No. Platte	Sept. 17-20
Madison	Madison	Sept. 18-20
Merrick	Central City	Sept. 24 26
Nance	Fullerton	Oct. 2-4
Nemaha	Auburn	Oct. 1-4
McKolls	Nelson	Sept. 17-19
Otoe	Syracuse	Sept. 3-6
Platte	Columbus	Sept. 25-27
Richardson	Falls City	Sept. 9-13
Rock	Bassett	Oct. 1-4
Sarpy	Papillion	Sept. 17-20
Saunders	Wahoo	Sept. 17-19
Seward	Seward	Sept. 26-29
Sheridan	Gordon	Oct. 2-4
Stanton	Stanton	Sept. 24 27
Thayer	Hebron	Sept. 24-27
Valley	Ord	Sept. 24-27
Webster	Red Cloud	Oct. 1-4
York	York	Sept. 3-6

NEW HAMPSHIRE.

Cheshire	Keene	Sept. 25-27
Grafton	Plymouth	Sept. 17-19

NEW JERSEY.

Atlantic	Egg Harbor City	Sept. 21-24
Burlington	Mt. Holly	Oct. 7-12
Hunterdon	Flemington	Sept. 24-26
Monmouth	Freehold	Sept. 24-27
Salem	Woodstown	Aug. 27-29
Somerset	Somerville	Oct. 8-10
Sussex	Newton	Sept. 10-13

NEW JERSEY DISTRICT.

Cumberland	Bridgeton	Sept. 4-5

NEW MEXICO.

Bernalillo	Albuquerque	Sept. 30-Oct. 4

NEVADA.

Lander	Austin	Sept. 18-21

NEW YORK.

Allegany	Angelica	Sept. 10-13
Chenango	Sherburne	Sept. 24-27
Clinton	Plattsburgh	Sept. 10-13
Columbia	Hudson	Sept. 17-20
Delaware	Delhi	Sept. 17-19
Dutchess	Poughkeepsie	Sept. 24-27
Erie	Buffalo	Sept. 3-13
Fulton	Johnstown	Sept. 9-12
Genesee	Batavia	Sept. 19-21
Lewis	Lowville	Sept. 17-20
Livingston	Geneseo	Oct. 1-3
Monroe	Rochester	Sept. 23-26
Montgomery	Fonda	Sept. 3-6
Niagara	Lockport	Sept. 19-21
Ontario	Canandaigua	Oct. 1-3
Orange	Goshen	Sept. 24-27
Orleans	Albion	Sept. 19-21
Oswego	Oswego	Sept. 10-13
Otsego	Cooperstown	Sept. 23-25
Putnam	Carmel	Sept. 10-13
Rockland	New City	Sept. 17-20
St. Lawrence	Canton	Sept. 17-19
Schoharie	Schoharie	Sept. 17-19
Seneca	Waterloo	Sept. 24-26
Steuben	Bath	Sept. 17-20
Suffolk	Riverhead	Oct. 1-3
Sullivan	Monticello	Sept. 3-5
Tioga	Owego	Sept. 10-12
Tompkins	Ithaca	Sept. 10-13
Washington	Fort Edward	Sept. 9-13
Wayne	Lyons	Oct. 1-4
Westchester	White Plains	Sept. 23-28
Yates	Penn Yan	Sept. 24-26

NORTH CAROLINA.

Wake	Raleigh	Oct. 15-18

OHIO.

Adams	West Union	Sept. 24-27
Allen	Lima	Sept. 10-13
Anglaize	Wapakoneta	Oct. 1-4
Ashland	Ashland	Sept. 4-7
Ashtabula	Jefferson	Sept. 24-27
Athens	Athens	Aug. 28-30
Belmont	St. Clairsville	Sept. 3-5
Butler	Hamilton	Oct. 7-11
Champaign	Urbana	Aug. 20-23
Clark	Springfield	Aug. 27-30
Clinton	Wilmington	Sept. 10-13
Crawford	Bucyrus	Sept. 24-27
Darke	Greenville	Aug. 26-30
Defiance	Defiance	Sept. 3-6
Delaware	Delaware	Aug. 27-30
Erie	Sandusky	Sept. 17-20
Fayette	Washington C. H.	Aug. 27-30
Fulton	Wauseon	Sept. 3-6
Gallia	Gallipolis	Sept. 17-20
Geauga	Burton	Sept. 10-13
Greene	Xenia	Sept. 10-13
Hardin	Kenton	Sept. 10-13
Harrison	Cadiz	Oct. 1-3
Highland	Hillsboro	Aug. 6-9
Highland	Greenfield	July 30-Aug. 2
Hocking	Logan	Oct. 2-5
Holmes	Millersburg	Sept. 24-27
Huron	Norwalk	Sept. 10-13
Jefferson	Smithfield	Sept. 25-27
Knox	Mt. Vernon	Oct. 1-4
Lake	Painesville	Sept. 17-20
Lawrence	Ironton	Sept. 25-27
Licking	Newark	Oct. 1-4
Logan	Bellefontaine	Oct. 1-4
Lorain	Elyria	Sept. 24-27
Mahoning	Youngstown	Sept. 2-6
Marion	Marion	Oct. 1-4
Medina	Medina Village	Sept. 10-12
Meigs	Rock Springs	Sept. 11-13
Miami	Troy	Sept. 30-Oct. 4
Morgan	McConnellsville	Sept. 9-12
Ottawa	Port Clinton	Sept. 26-28
Paulding	Paulding	Sept. 17-20
Perry	New Lexington	Sept. 11-13
Portage	Ravenna	Sept. 24 26
Putnam	Ottawa	Oct. 1-5
Richland	Mansfield	Aug. 27-30
Ross	Chillicothe	Aug. 13-16
Sandusky	Fremont	Oct. 1-4
Sandusky	Clyde	Sept. 24-27
Shelby	Sidney	Sept. 24-27
Starke	Canton	Sept. 23-27
Summit	Akron	Oct. 1-4
Trumbull	Warren	Aug. 28-30
Tuscarawas	Canal Dover	Oct. 1-4
Union	Marysville	Sept. 24-27
Van Wert	Van Wert	Sept. 10-13
Washington	Cody	Sept. 31
Washington	Marietta	Sept. 18-20
Wayne	Wooster	Oct. 1-4
Wyandotte	Upper Sandusky	Sept. 17-20

OHIO DISTRICT.

Scioto	Portsmouth	July 30-Aug. 2
Vinton	McArthur	Aug. 6-9

OREGON.

Baker	Baker City	Oct. 8-12

OREGON DISTRICT.

Coos	Arago	Sept. 9

PENNSYLVANIA.

Beaver	Beaver	Sept. 24-27
Berks	Reading	Sept. 17-20
Blair	Hollidaysburg	Sept. 17-20
Bradford	East Towanda	Sept. 24-26
Bucks	Doylestown	Oct. 1-4
Butler	Butler	Sept. 10-13
Carbon	Lehighton	Oct. 1-4
Clarion	Clarion	Sept. 24-27
Columbia	Bloomsburg	Oct. 9 12
Crawford	Conneautville	Sept. 17-20
Cumberland	Carlisle	Oct. 8-11
Fayette	Uniontown	Oct. 1-4
Greene	Waynesburg	Sept. 24-26
Indiana	Indiana	Oct. 1-4
Jefferson	Brookville	Sept. 10-13
Lackawanna	Scranton	Sept. 10-13
Lancaster	Lancaster	Sept. 9-13
Lawrence	Newcastle	Sept. 17-20
Lebanon	Lebanon	Sept. 3-6
Lehigh	Allentown	Sept. 23-27
Mercer	Mercer	Sept. 9-11
Montour	Danville	Sept. 24-27
Susquehanna	Montrose	Sept. 18-19
Tioga	Wellsboro	Sept. 10-13
Warren	Warren	Sept. 10-13
Washington	Washington	Sept. 17-20
Washington	Burgettstown	Oct. 1-3
Wayne	Honesdale	Sept. 24-26
Westmoreland	Greensburgh	Oct. 8-11
Wyoming	Tunkhannock	Sept. 18 20
York	York	Oct. 1-4

RHODE ISLAND.

Washington	W. Kingston	Sept. 10-12

TENNESSEE.

Bedford	Shelbyville	Sept. 5-7
De Kalb	Alexandria	Sept. 26-28

VERMONT.

Rutland	Rutland	Sept. 17-19
Windham	Newfane	Sept. 11-12
Windsor	Woodstock	Sept. 24-26

VIRGINIA.

Augusta	Staunton	Oct. 1-4
Fairfax	Grange Camp	Aug. 14-21
Fauquier	Warrenton	July 3-4
Lancaster	Kilmarnock	Nov. 6-9
Loundoun	Leesburg	Aug. 27-29
Northampton	Cape Charles City	Oct. 8-11
Prince George	Prince George	July 4
Shenandoah	Woodstock	Oct. 1-4
Tazewell	Tazewell	Oct. 1-3
Washington	Abingdon	Sept. 25-27

VIRGINIA DISTRICT.

Prince Edward	Farmville	Oct. 15-17

WASHINGTON TERRITORY.

Columbia	Dayton	Oct. 8-11
Kittitas	Ellensburgh	Sept. 10-15
Lewis	Chehalis	Oct. 2-4
Walla Walla	Walla Walla	Sep. 30-Oct. 5

WEST VIRGINIA.

Harrison	Clarksburg	Sept. 3-6
Jackson	Jackson	Sept. 9-12
Jackson	Ravenswood	Aug. 20-23
Mason	Point Pleasant	Aug. 27-30
Ritchie	Pennsboro	Sept. 17-19
Tyler	Middlebourne	Aug. 28-30
Wetzel	New Martinsville	Sept. 3-6

WISCONSIN.

Adams	Friendship	Sept. 17-19
Barron	Chetek	Sept. 11-13
Brown	Green Bay	Sept. 10-13
Buffalo	Mondovi	Sept. 18-20
Chippewa	Chip'wa Falls	Sept. 17-20
Dane	Madison	Sept. 23-27
Dodge	Beaver Dam	Oct. 1-4
Dover	Sturgeon Bay	Sept. 11-14
Dunn	Menomonee	Sept. 3-5
Fond du Lac	Fond du Lac	Sept. 10-12
Grant	Lancaster	Sept. 18-20
Green	Monroe	Sept. 11-14
Iowa	Dodgeville	Aug. 28-30
Jefferson	Jefferson	Sept. 10-13
Juneau	Manston	Sept. 24-26
Kewanee	Kewanee	Sept. 12-14
La Crosse	West Salem	Sept. 3-5
La Fayette	Darlington	Sept. 10-13
Langdale	Antigo	Sept. 24-26
Manitowoc	Manitowoc	Sept. 23-26
Marathon	Wausau	Sept. 26-28
Outagamie	Hortonville	Sept. 25-27
Pepin	Durand	Sept. 11-13
Racine	Racine	Sept. 3 6
Rock	Janesville	Sept. 10-13
Richland	Richland Center	Oct. 2-4
St. Croix	Hudson	Sept. 3-5
Trempealeau	Whitehall	Sept. 11-13
Vernon	Viroqua	Sept. 25-27
Walworth	Elkhorn	Sept. 24-27
Waukesha	Waukesha	Sept. 10-13
Wood	Parkesburgh	Sept. 3-6

CANADA.

Brant	Brantford	Sept. 10-12
Brant	Paris	Oct. 1-2
Bruce	Paisley	Sept. 24-26
Bruce	Walkerton	Oct. 1-4
Carleton	Ottawa	Sept. 9-14
Elgin	Rodney	Oct. 11-12
Elgin	St. Thomas	Sept. 24-27
Elgin	Ridgetown	Oct. 8-10
Essex	Essex Center	Oct. 7-2
Frontenac	Kingston	Aug. 29-Sept. 5
Gray	Walter's Falls	Sept. 26-27
Grey	Durham	Sept. 24-25
Haldimand	Cayuga	Oct. 1-2
Hamilton	Hamilton	Sept. 23-27
Huron	Goderich	Sept. 17-19
Kent	Chatham	Sept. 17-20
Lanark	Almonte	Sept. 24-26
Lincoln	St. Catharine's	Sept. 23-25
London	London	Sept. 9-14
Norfolk	Simcoe	Oct. 15-16
Ontario	Whitley	Sept. 24-26
Ontario	Cannington	Sept. 27-28
Ontario	Port Perry	Oct. 2-4
Oxville	Otterville	Oct. 4-5
Pell	Brampton	Oct 1-3
Perth	Stratford	Oct. 3-4
Peterboro	Peterboro	Sept. 24-27
Renfrew	Renfrew	Sept. 17-18
Renfrew	Beachburg	Oct. 3-4
Sherbrooke	Sherbrooke	Sept. 3-5
Simcoe	Collingwood	Sept. 25-27
Victoria	Lindsay	Sept. 24-26
Waterloo	Wellesley	Sept. 24-25
Wellington	Fergus	Oct. 10-11
Wellington	Guelph	Sept. 25-27
York	Markham	Oct. 2-4
York	Danforth	Oct. 10
York	Woodbridge	Oct. 9-10

NOVA SCOTIA.

Yarmouth	Yarmouth	Oct. 10-11

P. E. I.

Queens	Charlottetown	Oct. 2-3

To Our Readers.

If your County or District Fair does not appear in the above list, kindly request the Secretary of the Society to forward to us the name of the place, where, and the date when it is to be held. We desire a complete list of fairs in the United States and Canada to appear in the September number of the AMERICAN AGRICULTURIST.

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